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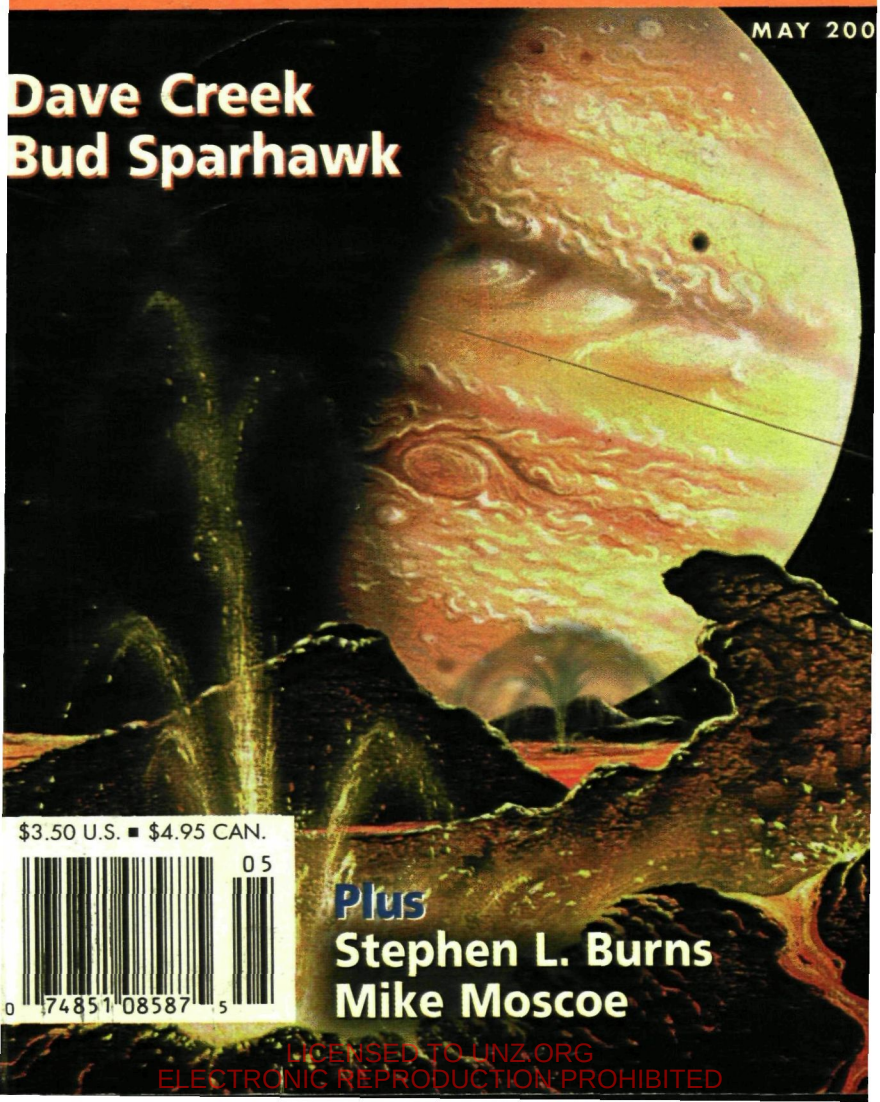

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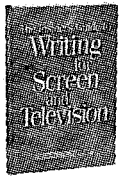

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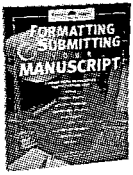

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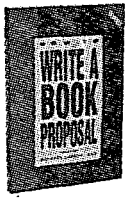

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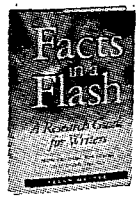

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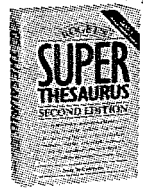

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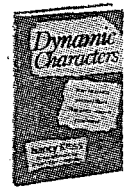

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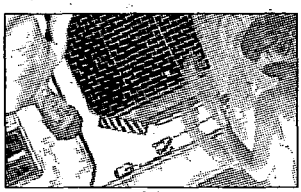

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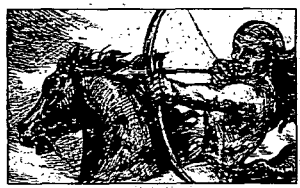

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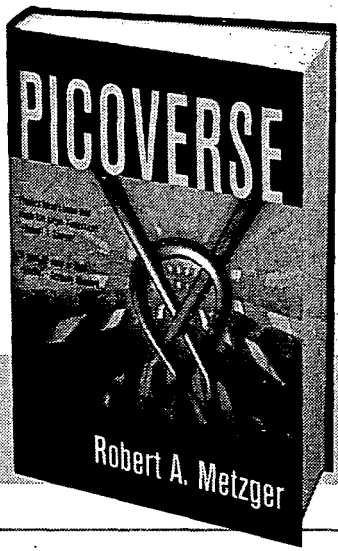

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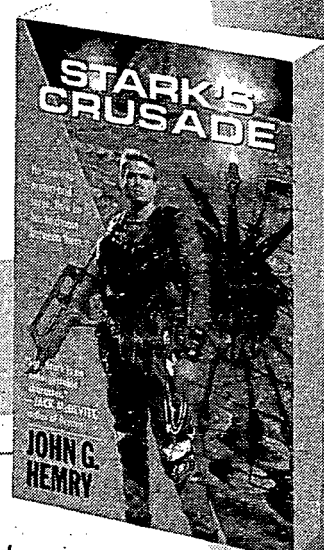

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EDITORIAL Stanley Schmidt

A DEADLY FOG

No, I'm not talking about nerve gas or any such thing, but about a far deadlier fog—a thing that has killed vast numbers of people throughout history, and a thing that remains all too relevant to current events.

By the time you read this, much will undoubtedly have changed, and some of what I say may no longer be what I would say if I were writing for immediate consumption. Such are the hazards of writing for a magazine with a long production cycle, and for that reason I will try *not* to write for immediate consumption. That effort is one that perhaps should be made a little oftener these days, anyway. The marvelous instantaneity of the Internet has made it so easy for people to say publicly whatever pops into their heads, that too often they do. Sometimes, I think, they would do better to cogitate a little longer before putting fingers to keyboard, to ponder such questions as, "How much of what I'm thinking is just the heat of the moment, and how much will I be proud to have said if somebody reads it back to me six months from now?"

I'm writing this a month after the World Trade Center and Pentagon attacks of September 11, which history will likely remember as the abrupt beginning of "The Terror War," and in the midst of a rash of anthrax scares (and a smaller number of actual infections, apparently distributed deliberately through the mail). Those events, and others that seem all too likely to follow, are my main concern—but I'd like to begin by commenting on a ten-year-old news item that may appear to have nothing to do with them.

Back in 1991, my local paper carried a story about a college or university—perhaps it's just as well that I don't remember which one—that had recently experienced a couple of rapes on campus. In itself, that's unfortunate but not especially newsworthy beyond the neighborhood where it occurred. What made it of far broader interest was the "solution" proposed by someone there: a strictly enforced early-evening curfew for all male students.

I hope most of my readers find it as absurd and unconscionable as I do that anybody would seriously suggest punishing half of a population for something that one or at most a couple of its members did. Sure, the campus had a serious problem: it needed to find and take appropriate action against the rapist(s). But a categorical curfew arbitrarily imposed on a large group sharing nothing but gender is hardly an appropriate response to a dastardly deed committed independently by one of them.

Yet it was seriously proposed—and similar suggestions have been made, by people on "both" sides, in our incipient War on Terrorism.

That is the "deadly fog" of my title—the fog that clouds so many people's thinking, especially about emotionally charged issues, and impels them to leap to logically untenable conclusions and actions based on them. If, by the time you read this, the worst has come to

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pass and we find ourselves embroiled in a new world war, that will be the main reason: that one or more groups of people have succumbed to the temptation to do illogical things like treating the actions of a few individuals as those of a much larger group.

And, I emphasize again, no group is categorically immune to that kind of thinking. Let's consider a few examples of things I've heard in the last few weeks from a wide range of people in widely separated parts of the world.[1] Some of them contain obvious logical flaws; some sound reasonable and even noble at first glance, but contain subtler pitfalls.

• *"America deserved the attacks of 9/11 because of its Mideast policies."* *Nobody* deserved the attacks of 9/11, in any time or place that I can think of. Even if there are things that need to be rethought about U.S. Mideast policies, those policies were not made by the thousands of men and women going about their business in the World Trade Center. An attack on them had no logical or reasonable connection with U.S. government policies. An appropriate way to try to modify them would be to *talk* to the people who make and administer them—that is, the U.S. government, through its diplomatic representatives.

• *"We must strike back immediately, for revenge!"* Revenge is a primitive motive that civilized people should have long since outgrown. It does not undo the damage already done, and in itself does not prevent more. If we must strike back, *that* is the reason: to prevent this sort of thing from happening again. The distinction is important, and may have a profound effect on *how* we strike back—and how much unnecessary additional damage we do ourselves. Shooting somebody may make you feel good, but it doesn't solve the problem unless you shoot the right people—and unless there really is no better way.

• *"We must not strike back at all. Violence just begets more violence."* In principle, I agree; and it's often even true in practice. However, the present case looks uncomfortably like a genuine exception. These were not the first attacks we have seen by these shadowy terrorists. Little response was made to the earlier ones, and they've grown progressively and dramatically worse. If we continue to endure them with no active attempt to end them, I see no reason to believe they will not continue to get worse. I would *always* prefer a nonviolent solution to any problem. This is probably the first time in my half-century-plus of personal memory that it has seemed to me that a military or military-

[1] For purists, I acknowledge that these are not, in general, exact quotations from specific individuals. But they are, I believe, accurate paraphrases of opinions I've heard expressed in approximately equivalent ways by at least a few individuals.

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like action was really necessary. I would love to be proved wrong; but the regrettable fact is that I have not yet been able to think of, or heard anyone else suggest, an entirely nonviolent solution that seemed to have any real chance of working.

• "*We must talk to them and try to understand their concerns.*" Whose concerns, and to whom shall we talk? This is not a nation we're dealing with; it's a band of thugs who skulk in the shadows, murder thousands of innocent strangers, and destroy billions of dollars worth of property—all without saying what they want to talk about, or even who they are. As a conversational gambit, this is way off the bottom of the scale. And if somebody wants to talk about concerns that helped motivate these hoodlums, it should be the legitimate governments of their countries, not the hoodlums themselves. Otherwise, international law, already tenuous but increasingly essential, breaks down altogether.

• "*There's nothing to talk about. Evil has been done, and all that matters is avenging it!*" See above, about "avenging"—and consider also that even if you do accept revenge as a legitimate motive, it makes no sense to talk about taking it against anyone other than the perpetrators of the deeds you're "avenging." Evil has been done, surely, and we certainly need measures to keep it from happening again. But that does not mean there is nothing to talk about. Even though the terrorists are not legitimate or typical representatives of their countries of origin, their motivations may stem partly from concerns that bother those countries. If so, their governments should talk about those concerns, and we should listen—and vice versa. Anybody, whether individual or nation, should make some effort to understand the ideas and attitudes of anybody else they interact with. If nothing else, this might prevent such unfortunate incidents as President Bush's ill-advised reference to his anti-terrorism campaign as a "crusade," and the great uneasiness that that prompted among many Arab and Muslim listeners. I don't think he meant anything nearly as sinister as it sounded to Muslims—he just didn't know that it would sound to them the way "jihad" does to Christians and Jews. And they didn't know that he didn't know that. A little more understanding on both sides would have

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helped peace of mind on both sides.

•*"We must give up whatever civil liberties are necessary to insure safety. All that matters is security!"* This is dangerous talk. Yes, we probably do have to give up *some* civil liberties *temporarily*, but we should do so reluctantly and only insofar as necessary. And we must remind ourselves constantly that we must reclaim as much of them as possible, as soon as possible. Liberty is a very large part of what this country is about, and giving it up in the name of protecting it would simply show that we no longer understand the concept.

•*"No war against nations. These are criminals; let's just catch them and bring them to trial before an international court of justice."* OK: how? It's true, and important, that these are criminals, not nations. However, it's also true that they are quite adept at making themselves hard to catch, and they're being actively protected and aided by certain governments. Therefore action against those governments is probably necessary as part of the effort to bring the terrorists to justice and/or put them out of business. In at least the most prominent such case, the offending government is not at all equivalent to, or representative of, that country's *people*—and our government is making a commendable effort to observe that distinction.

•*"The American infidels are waging war against Islam. It is the duty of all Muslims to wage holy war on America."* This has nothing to do with Islam, and most Muslims understand that. I don't know whether the agitators who say things like this actually believe them, or simply see them as a useful tool for stirring up people's emotions. In case any of the terrorists (or those who aid and abet them) actually don't understand the reality, let me spell it out in simple terms for them: America is not attacking you because you are Arabs or because you are Muslims. It is attacking you because you do despicable, unforgivable things that no human being should do to any other. You would be attacked just as relentlessly for doing those things, no matter what ethnic group or religion you claimed to represent—and a great many Muslims and Arabs are *not* being attacked because they had no part in those deeds.

•*"Let's bomb Afghanistan to smithereens."* Or even, *"All Arabs are our enemies."* Regrettably, there are a few Americans who do see this as a war on all Afghans, all Arabs, or all Muslims, and turn their hate full-blast on anyone who belongs to any of those groups, or even looks as if he or she *might* belong to one of them. These people do not represent America any more than the fanatical terrorists represent their countries or Islam. Let me spell it out yet again, for them: these attacks were *not* perpetrated by "the Afghans," "the Arabs," or "the Muslims." They were perpetrated by a handful of extremists with way too much power at their disposal. Blaming or attacking all for the actions of an atypical few is logically indefensible, and completely contrary to this country's better traits. As for Afghanistan, I've read accounts of conditions there by people who've lived there. They'd already been bombed to smithereens before all this started; most of the inhabitants were as fed up with the Taliban as the rest of the world, but too shattered and impoverished to throw them out.

•*"We will not allow the killing of any Arab or Muslim. Any attack on one is an attack on all."* See the preceding. A logical *non sequitur* is a logical *non sequitur* no matter who commits it. And belonging to *any* group does not exempt you from responsibility for heinous deeds.

•*"United we stand, divided we fall. Either you're with us, or you're against us!"* When we all face a big, shared threat, it's reasonable to be proud that a large number of us can stand together to take concerted action against it. But it's

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not necessary for "united" to mean "absolutely unanimous," or to attack anyone who expresses a different opinion as "anti-American" (or "anti-Arab," or . . .). Having a different opinion about how to handle an enemy is *not* the same as supporting him. It's just as possible to be united in a bad cause as a good one, and we *need* dissenting voices, if only to keep us on our toes and reexamining our motives and methods. Sometimes they may even have a better idea, and we need all the ideas we can get. And whether they do or not, we dare not forget that freedom of speech is one of the things we're supposed to be defending.

There's no denying that we have a serious problem and we're going to have to do something about it, probably including things that we'd rather not do. But so much is at stake that it's more important than ever that we try hard to do it *right*—even though both some of "them" and some of "us," through foggy thinking, will make that very difficult. That merely means that all of us who can must make every effort to think clearly and act accordingly. ■

IN TIMES TO COME

Our June issue will feature "Sidehunter," a wild and wooly adventure by Rajnar Vajra, set on a colorful and very alien world that allows no dull moments. But no matter how hostile the world, a troubleshooter may find that the problem has at least as much to do with the people who hired her. Wolf Read, of course, is the perfect artist to bring such a place to visual life, and he's provided a spectacular cover and opening spread.

Our fiction line-up will also include a new Brenda Cooper and Larry Niven tale (set in the same future as "Choosing Life" in our January issue), a worthy successor to Jerry Oltion's "Astral Astronauts" story in this issue, the first new "Victor" story in way too long from Grey Rollins, and a haunting and thought-provoking short by Amy Bechtel.

Dr. Richard A. Lovett, fast becoming one of our best sources of fact articles, offers a new one on "Subsisting on Oxygen Lite"—a look at the adaptations needed to live and function in some of the most alien parts of our own planet, and what our experiences here may suggest about other, *really* alien worlds.

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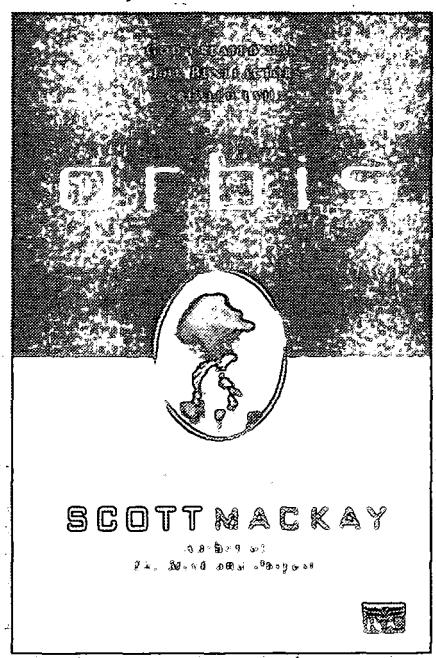

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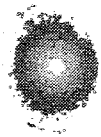

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Splendor's Truth

Dave Creek

Rescue seems such a clear example of a Good Deed—unless rescuer and rescuee can't agree on what it means!

Illustration by Vincent Di Fate

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One

This could be my biggest mistake ever, Earth Unity Ambassador Chanda Kasmira thought as the starcraft *Nivara II* boosted from the planet Splendor. She sat to the right of the ship's captain, Trenton Bram. "Any more information about that craft?"

Bram said, "No word on whether it's Sobrenian." The unknown vessel was still only a starlike image on the passive sensor viewscreen. Bram addressed his pilot, Ensign Liana Santos. "Got that stardrive microjump ready?"

"Yes, sir. It'll bring us within 100 K, parallel to the craft's path."

"Transmit the settings to the *Nigel Harding* and the *Falcon*." Those were the two Unity craft that accompanied the *Nivara II*. Bram had ordered the fourth, the *Angra*, to remain in planetary orbit to sound the alarm if needed.

"They have them," Santos said.

"Initiate."

On the forward viewscreen: a kaleidoscopic swirl of color as old-space (already existing, "natural" space) before them was annihilated and new-space formed behind them. This local distortion propelled them within minutes toward an area just over eight million K out from Splendor.

As natural space snapped back onto the viewscreen, Chanda looked past the images of the *Harding* and *Falcon* and got her first look at the unknown starcraft. She drew in a slow breath. "That's . . . an incredible ship." The holo before her was just beginning to read out the starcraft's vital stats: 3 K long, .7 across at its widest point, but "only" 1.5 K in height. Shields firmly in place, weaponry unknown, some shroud capability up and preventing *Nivara II*'s sensors from registering more detail, and on and on, and none of it as compelling as the simple fact of the starcraft itself.

Its main fuselage was a long cylinder with what looked like giant engine nacelles slung beneath. Running closely along the top of the craft was a finlike projection, thick at the stern and narrowing to a point by the time it reached the bow. Its tip pointed forward, as an outstretched finger or a probing claw might. Bold strokes of yellow, maroon, and gold decorated the craft's hull.

Santos said, "We've matched trajectories. We're just over ninety-nine K removed from the craft. It's about twenty-seven light-minutes out from Splendor, coming in at just over eight thousand K per second."

Chanda squinted to do the math. "If they don't change velocity, they'll reach the planet in about eighteen hours."

Bram told Chanda, "Let's see if they'll talk to you."

Chanda nodded, opened a link, and said, "This is Earth Unity Ambassador Chanda Kasmira, calling the unknown starcraft which has entered the Splendor system. Please identify yourselves and the nature of your mission."

In return came audio clearly in the Sobrenian language, which Chanda's datalink dutifully translated for her: "*. . . appears that I am always making an exception to not-in-person for you, Ambassador.*"

Chanda leaned forward. She realized who was speaking to her. Domerlan was a Sobrenian commander who usually insisted that all communications with him must be in person, and on his starcraft, the *Melareon*. By the time Domerlan's people had backed down from their plans to use Splendor as a weapons-testing site, Chanda had caused Domerlan to make several exceptions to his policy.

But what was happening now? This craft was clearly not the *Melareon*. It might not even be Sobrenian. "Captain Domerlan? May I ask what your intentions might be?"

"My intentions, Ambassador, are to heal from severe injuries, and to assist this hospital craft in finding a safe harbor." As the Sobrenian spoke, Chanda recalled the time Domerlan had stood proudly before her aboard his ship. His

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torso was three times the thickness of a Human's and his skin was rough but unscaled. The Sobrenian's eyes swung independently in their sockets and his blunt snout's lips formed his words precisely.

Domerlan continued: "This craft's propulsion and life-support systems have suffered extreme damage. We cannot remain in space. Fortunately, I was aware of Splendor's suitability for an attempted landing."

Chanda watched as Bram shook his head as if to say, *Don't trust him.* "Captain Domerlan," Chanda asked, "What happened to the *Melareon?* How severe are your injuries, and is anyone else hurt? Was this the result of a natural disaster or an armed conflict? And is this craft of Sobrenian origin?"

Domerlan said, "You have . . . many questions. The *Melareon* is destroyed. My injuries threaten my continued existence. While I remain alive and conscious, however, I command this hospital starcraft. We intend to land upon Splendor's surface."

Chanda said, "I must ask you to pick an unpopulated area, Commander."

"Cannot you anticipate my response, Ambassador? It will be the same as it was during my disruptor testing."

"I'll get back with you," she said, and cut the link. She looked at Captain Bram. "We've got less than eighteen hours."

The *Nivara II* and its crew had examined the giant hospital starcraft bearing down on Splendor for nearly sixteen hours straight. Neither visual inspections nor detailed sensor sweeps had uncovered anything threatening about the craft. They *did* confirm the craft didn't have enough thruster power or gravitic energies left to keep from crashing into Splendor.

Chanda tapped her fingers absently on her chair arm. She called up a small holo of the planet—all blue waters, icy glare, and white clouds, with just a hint of a green band across the equatorial land areas. Most of Splendor's western hemisphere was taken up with the gigantic body of water Humans had named the Great Sea. It was beautiful, and easy to forget that the gas nebula from a ten-thousand-year-old supernova would wipe out all life on the planet in just over nine decades.

Bram stared at the rotating image. "We've looked at the hospital starcraft's trajectory. It's been adjusting slightly to make an aerobraking re-entry over the equator, in the same direction as Splendor's rotation."

Chanda said, "Makes sense—reduce the relative speed of impact."

"But the equator's less densely populated. Too warm for the highlanders, but perfectly suited for the valley dwellers." The valley dwellers were one of two intelligent species on Splendor. They lived within volcanically heated valleys and were proficient in crafting metal tools and weapons. The other Splendorian species, the highlanders, traded furs for valley dweller tools.

Bram rubbed his dark beard and looked troubled. "What if a Sobrenian ground force comes pouring out of that ship after it lands?"

Chanda's brow furrowed. "You're not suggesting we just stand aside while that starcraft crashes into the planet?"

Bram said, "It may be the best thing for Splendor."

"And if it's not Sobrenian? If it belongs to another species? What does that species think about Humanity then?"

Chanda saw Bram's gaze drop from the viewscreen to the Splendor holo and hold there. Chanda knew her best bet was not to say anything for a moment. Finally Bram nodded, apparently to himself. "Let's keep trying to get hold of Domerlan."

Two

Chanda was leaning forward at her bridge position next to Bram. She clenched her hands so tightly her wrists hurt. She forced them to relax as the

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comm sounded: "This is Commander Domerlan. We demand your assistance."

Chanda said, "Captain Domerlan, we were concerned—"

"Ambassador Kasmira, I have been the subject of surgical procedures until moments ago. This craft requires constant updating and confirmation of its position, and assistance in maintaining a stable trajectory safely onto the surface. We will require food, shelter, and medical attention once on the surface."

Chanda forced her voice to remain even: "Captain Domerlan, the discussion over here has been whether to provide any of the services you request at all. Your craft has not been forthcoming with information—"

"Sobrenians do not comply with the meaningless demands of presentients."

Chanda thought, he isn't making this any easier. "Captain Domerlan, we'll try to keep this channel open throughout the landing sequence. Now shut the hell up."

Bram's eyebrows raised in surprise, then furrowed with concern. "I thought you were a *good* ambassador."

Chanda shrugged. Bram began coordinating with the *Harding* and *Falcon* captains on the best way to assist the hospital starcraft as it entered the Splendorian atmosphere and sought a safe landing site.

Bram said, "They're making atmospheric entry from Splendor's nightside. No horizon visible, unless someone on that starcraft has a different visual range from Humanity or Sobrenians. That means sensors have to detect the horizon to check the starcraft's attitude." A frantic punching of controls, then Bram continued: "I can provide a continuous feed of our own sensor data." He nodded toward Chanda. "Let our friend know that."

Chanda spoke across the open channel to the hospital starcraft, but Domerlan didn't reply. "Maybe he's just pouting. If all goes well, though, where should it come down?"

"I've extrapolated from their current trajectory. It should whip around nightside, start across the Great Sea, then come back into dayside and ground itself on the western side of the main continent."

Chanda's fingers deftly worked the holo controls to bring up an image of that area on a readout. "Pretty typical of Splendorian equatorial regions—not much nitrogen or phosphorus, so plant life's pretty sparse. Valley dweller habitations are pretty sparse, too. Too warm for any highlanders to be there at all. Captain, could we send one of our other starcraft ahead to do a quick sensor-scan of the likely touchdown area?"

"I'll send the *Harding*," Bram said, and passed the order on.

Chanda glanced toward the *Nivara II*'s main viewscreen, as the Unity craft paced the hospital starcraft. Splendor's atmosphere was already visibly buffeting the other ship, and air friction was causing its shielding to glow. From the conn, Santos reported, "Temperatures topping out at 317 C."

Chanda said, "It looks like they're staying pretty stable, within about .02 percent of their intended arc. They should be within about thirty minutes of touching down."

Bram said, "Well into the atmosphere now." A warning tone sounded from his station. "The hospital starcraft's off course—five percent—seven—I don't understand. Our sensor data's getting through, it should be able to compensate. Wait a minute . . . *there's* the problem. Two thrusters have given out, both on the starboard side. This ship isn't going down where we predicted."

By the time the hospital starcraft burst onto Splendor's dayside, it was in trouble. The ship sliced through a thin layer of clouds toward a shoreline still over the horizon. As the *Nivara II* followed, Chanda called up a holodisplay showing the seas below. They'd seemed perfectly flat from orbit, as if molded to Splendor's surface, but now they'd acquired

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texture, as the waves rolling across the water's surface became more apparent. Chanda told Bram, "The western shoreline's still eighty K distant. How long until impact?"

Bram said, "Less than ten minutes. It's going to be a splashdown. Correction—not even that. The ocean surface is frozen there."

The hospital starcraft's gravitics weren't up to the task of keeping it aloft. It lost speed rapidly, and threatened to tumble out of control from a height of less than five hundred meters. Chanda looked at the ocean again and saw what appeared to be an oily film on its surface—the beginnings, she knew, of sea ice forming. As the *Nivara II* neared the shoreline, the ice below turned gray as it grew thicker, then became opaque.

The three-kilometer-long craft managed to do a belly-flop onto the Great Sea's frozen surface. Chanda was amazed at how the ice seemed unwilling to part, even beneath the great ship's unbelievable mass. For a moment, the ship seemed suspended between sky and ice, then the ice bowed beneath the starcraft, and jagged cracks radiated outward with unexpected speed. Gigantic ice floes shot many meters into the air as the ice reluctantly parted. The Great Sea's waters rose up to the sides of the giant craft, in twin walls hundreds of meters high. A passing flock of flamebirds scattered. Just as those walls began their downward descent, an island-sized bowl of water formed beneath the starcraft, rising on all sides as if to embrace it.

That embrace became a final, fitful grasp as the bowl of water collapsed, taking the hospital starcraft and ice floes the size of houses down with it. Chanda asked Santos, "How deep is the ocean here?"

The ensign made a quick check, "The ocean floor's actually an undersea plateau. It doesn't drop off too steeply. Looks like about 2.5 kilometer."

Bram said, "I guess we're a naval operation now. And us with maybe one seagoing craft between four Unity starcraft."

Chanda watched as the swirling ocean waters began to calm. Within minutes you wouldn't be able to tell they'd been disturbed. Santos reported, "Near as I can tell, the ship's launching some kind of lifepods."

Bram asked, "How many?"

"Looks like five altogether. About two or three life-forms within each lifepod. Sobrenian lifesigns. Not much of an evacuation."

Chanda turned to Bram. "Can we mount a rescue effort?"

Bram said, "I can't risk taking this craft down low enough to get an enticement field locked on those pods. The winds are picking up. Inertials keep us from feeling their effects on the ship, but it's turbulence all the same. It's not the same thing as being out in space where we can match velocities." Bram indicated Ensign Santos. "And as good a pilot as she is, hovering is difficult in a starcraft seventy meters long. We couldn't remain stable enough to get a good lock. And I can't remain station-keeping here forever, either. Gravitics use a lot of energy, and within about twenty minutes we're going to have to land or return to orbit." The same exotic matter, or "anti-mass," that allowed a starcraft to travel at superluminal speeds easily harnessed enough energy to power that craft's gravitics, life-support, and other systems under normal conditions.

Which these weren't. Gravitic and enticement fields used up energy resources rapidly. Waiting for a starcraft to regenerate those resources could take hours or even days.

Chanda asked, "What about a shuttle?"

"Ambassador, I'm responsible for your safety."

"A responsibility you can delegate to one of your fine officers. Listen, I've had the most experience dealing with Sobrenians—"

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"Meaning you've done it once."

"—and so far this contact is diplomatic, not military. We can't take the chance of panicking beings who are already frightened and confused. I'm a frontier ambassador. Trust me."

Soon Chanda was boarding one of the *Nivara II*'s shuttles along with its pilot, Ensign Rico Durand. A hurried launch procedure, and within moments the shuttle hovered over the splashdown site. The Great Sea's waves were already buffeting two lifepods. As Chanda watched, a third broke the surface. She checked a sensor readout. No sign of the fourth or fifth pods. "What could have happened to them?" Chanda wondered out loud.

Ensign Durand said, "Pods meant for space might not be right for a water landing."

"You're right. Protection against vacuum may not be effective against water pressure. Can we get an enticement field on that pod?"

"Not enough power to lift the pod itself. And if we tried to lift individuals, we could tear them apart." Durand shrugged. "Then let's see who we can pick up manually."

Within moments, Chanda could make out much more detail on the three lifepods. They were about nine meters across, a dark metallic green. Whoever might still be alive aboard them, the waves were giving them quite a ride. Chanda's stomach churned just watching the pods undulate upon the Great Sea's surface.

Durand said, "Ambassador, you can station yourself just outside the lock. I'll open the outer hatch and hope someone can jump inside, then we'll lift out of danger and open the inner hatch."

Chanda said, "Sounds like a plan." The shuttle was less than fifteen meters from the water's surface. Beings were emerging from two of the three pods. Definitely Sobrenian.

"Hold on," Durand said. "Once I open the lock, the inertials go off." That was standard; trying to bring life-forms aboard through an inertial field would be fatal to them. The lock's outer seal opened, and despite Durand's warning, Chanda wasn't at all prepared for the pounding the winds delivered to the shuttle. She grabbed the edge of the inner lock and fought to stay on her feet. The shuttle was designed to make gentle landings on planetary surfaces, or soft docks with larger craft.

The shuttle was about twelve meters from the ocean's surface now, moving to starboard, lock-first, toward the pods, so Chanda had an excellent view as the middle pod grew in her view through the hatchway. It rocked rhythmically in the ocean swells. Three Sobrenians stood atop the pod, holding onto it with all the strength they could muster. They wore the many-layered robes whose multicolored fabrics signified their various ranks.

Durand said, "Here goes!"

The shuttle hovered at the apex of the swells the pod was riding. Given a little timing and luck, the Sobrenians could hop aboard one at a time.

Which is just what one of them did. His heavily-muscled legs thrust him across the nearly one-meter gap between the pod and the shuttle, as his arms and legs flailed wildly. Sobrenian feet could grasp as efficiently as hands and the species seldom wore footwear, so the Sobrenian was able to grab the edge of the hatch in four places. Chanda tried to indicate to the Sobrenian though hand gestures that she would open the lock in just a moment, once the shuttle gained a little altitude and stabilized.

That's when the Sobrenian calmly pulled a hand weapon from under his robes. "Weapon!" Chanda shouted to Durand. The Sobrenian was aiming at the inner hatch's small window. "Splash the son-of-a-bitch!"

Durand reacted immediately, tilting the shuttle so its starboard side was oriented *down*. Chanda's body slammed

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against the inner hatchway, and she watched as the Sobrenian lost his footing and tumbled out of the hatch, arms and legs flailing, and fell from fifteen meters up into the Great Sea's roiling waters.

Chanda barely noticed when the lock's outer hatch slid shut and inertials resumed, barely noticed the angry gestures the remaining Sobrenians made from the pods below, or the shuttle quickly righting itself, or Durand's confirmation that the armed Sobrenian had not broken the water's surface again. Great job, Chanda. You go on a mercy mission and kill someone.

Bram was calling frantically on the datalink. "Ambassador! Are you and Durand all right?"

"*We're* fine. But Domerlan's missing a colleague."

"Why'd he try to shoot you?"

"No idea."

"Get the hell back here. I'm sending another shuttle with Lieutenant Tiernan and four marines aboard and stunners pointed at anyone we rescue. Any that don't like it, they can join their friend among the Splendorian fishes."

Chanda said, "Between my peacemaking skills and Bram's charm, the planet's in good hands."

Three

Chanda stood once again on the *Nivara II*'s bridge. Captain Bram had landed the Unity craft on a wide, flat stretch of beach on the main continent's western shoreline. Also there were Ensign Santos, who would coordinate the actual rescue effort, and Lieutenant Lewis Tiernan, the *Nivara II*'s Security Officer. A small probe dropped into the ocean transmitted a holo-image of the wrecked hospital starcraft from the floor of the Great Sea.

The hospital starcraft had dredged a huge trench in the ocean floor. It lay partially submerged in mud and nearly obscured by clouds of water-borne dust. Its yellow, maroon, and gold coloration was blurred to an indistinct brown. Chanda was amazed that it looked completely intact; even the fin atop the structure seemed unscathed.

"I did some studying up just before I got here," Chanda told the assembled group. "What we really need are 'salvors.' Those are seaborne Humans who seek and salvage ships from Earth's oceans, and sometimes those of other planets. They would know how to get down to that starcraft."

Tiernan asked, "Could any of these salvors be available to come here?"

"I sent a priority message to Unity Headquarters. The nearest ones are back on Earth itself. That's two and a half weeks away." Chanda shook her head. "Anyone down there would be long dead. But they did send along some suggestions." Chanda stepped closer to the image of the sunken starcraft. "This craft isn't designed to be retrieved from water. See here on the stern, and several places on the sides—we've identified twelve hatches. A pretty small number when you consider how damned big this thing is. They appear to be manually operated, and they open outward. Anyone know the difficulty in getting those hatches open?"

Captain Bram said, "Water pressure."

"That's right," Chanda said. "All those hatches have many metric tons of water pressing down upon them. An individual can't go down and open them. You have to equalize the starcraft's interior pressure, or at least the pressure of a section or a room's pressure, with the outside environment."

Ensign Santos said, "How do you do that?"

"Flood the compartment. Ocean craft have pumps that do just that, in emergencies. Starcraft, of course, do not."

Bram asked, "How did those lifepods get out, then?"

"That'll be one of the first questions we ask if we establish contact with Domerlan again."

Lieutenant Tiernan was looking close-

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ly at the holo-image, his fingers barely brushing his mouth. Then he pointed to an area at the hospital starcraft's stern, just to one side of one of the hatches. "What if we cut through the starcraft's hull? Just a tiny hole, enough to allow water in slowly? Equalize the pressure that way?"

Chanda said, "The water's under such pressure that any life-form the size of a Human or Sobrenian that was standing there would be cut in half."

Santos said, "We could use enticement fields to force them open."

"Except that this starcraft is under 2.5 kilometer of water. Our fields are designed to go through a vacuum or a relatively thin planetary atmosphere. They'll diffuse quickly trying to cut through water from the surface. We have one submersible craft. We're going to put a larger enticement field generator aboard it so we can work at close range. We'll have to hope it's enough."

Bram said, "Here's another problem—energy resources."

Chanda said, "It would actually be easier if the starcraft were in a deeper area. We could construct a power plant that would use the temperature differential between colder deep water and warmer surface waters to generate power. But these waters aren't deep enough, and we wouldn't have the time, anyway."

Bram continued: "Our craft don't have enough energy to remain station-keeping over a single spot for more than about half an hour at a time. I thought about having the *Falcon* place power-sats into geosynchronous orbit. They could beam the energies we need directly to our starcraft or right onto the crash site."

"Is there a problem with that?"

"How do you deliver the energy? Microwave beams would require collectors kilometers wide. We thought about lasers, but look at this." Bram called up a picture from Splendorian orbit. A red dot marked the crash site. To the southwest of that area, Chanda could see a wide, dark, roiling storm front. Bram said, "The weather's just going to make things that much more difficult. The churning atmosphere diffuses the beam and makes it harder to keep on target. Meanwhile the storm winds increase the power requirements for station-keeping. Diminishing returns."

Santos leaned over her console to check a readout. She frowned. "Something else I've noticed. Something different about their shroud. A frequency shift, or something. It's keeping us from registering how many life-forms are aboard or what condition they're in." She shook her head in disgust. "They're using energies that could help them survive longer down there. But they're passive energies—they won't prevent us from entering the starcraft."

Chanda asked Bram, "I understand we've not learned anything substantive from the Sobrenians we lifted off those pods?"

Bram said, "They're not talking."

"And no more contact with Domerlan?"

Bram said, "None."

"We have to find out if this starcraft has more lifepods. And we have to find a way to keep open that hole in the ice the starcraft made."

Bram said, "The submersible's aboard the *Angra*. It's an unarmed exploratory craft, the *Galathea*. I'm bringing *Angra* down from orbit and sending the *Harding* up to take its place."

Lieutenant Tiernan said, "I don't suppose there's any sort of primitive tech either Splendorian species can help us with."

Chanda said, "None. The valley dwellers have never developed even the simplest boats."

Tiernan asked, "What about the highlanders?"

"Some of them fish in shallows, and that's about it. We're on our own."

Chanda monitored the sensors on the *Galathea*'s small command deck as it

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hovered over the three-K-wide hole the starcraft had punched into the ice covering the Great Sea. She sat behind Ensign Rico Durand, who was copiloting at Chanda's insistence. Irene Radford, a crewmember from the *Galathea*'s mothership, the *Angra*, piloted. The *Angra* itself was stationkeeping about half a kilometer above.

In the equipment hold behind the command deck, a large enticement field generator taken from the *Angra* had been linked into the shuttle's systems. The hope was that *Galathea* could draw close enough to move a section of the downed craft or handle lifepods leaving the ship.

Also in the hold were four marines from the *Nivara II*, Lieutenant Tiernan among them, in case they happened upon more Sobrenians looking to make mischief.

"Look at the hole," Chanda told her colleagues. "It's already closing up." Chanda saw that the hole's jagged edges were close to healing; the roiling waters in the middle were growing still as ice crept across the gap. "Could it close up over us after we submerge?"

Ensign Radford said, "The ice surrounding the hole isn't even two meters thick, and we can break through that easily. The ice forming over the hole won't be more than a few centimeters thick by the time we come up."

"Look toward the western horizon," Chanda said. A dark wall of clouds kilometers wide was approaching.

"Then we'd best get to it," Radford said. "Diving." The *Galathea* crunched through the ice and slipped beneath the ocean waters, its inertials making the transition from sky to sea a smooth one. Chanda did a widescan lifesearch of the surrounding ocean. Microbes aplenty, of course. And the ever-present schools of wingfin, which explained the flamebirds they'd glimpsed earlier. They fed upon the wingfin.

And something else, that only registered at low levels. Chanda didn't understand the readings. The entire seafloor within sensor range registered with lifeforms. No, check that—with a *single* life-form.

Except for several meters around the crashed hospital starcraft. "Ensigns Durand . . . Radford . . . what do you make of these readings?" She blipped them over to their readouts.

Radford said, "I'm usually pretty good at interpreting lifesigns. But I don't know what to make of these."

Durand shook his head. "Not my area of expertise, I'm afraid."

Chanda said, "Look how the lifesigns tail off the closer you get to the ship."

Radford said, "When it crashed, it must have killed off part of . . . whatever it is."

Chanda looked toward the forward screen again. The waters had grown darker, the deeper *Galathea* descended. It actually made the ocean's depths seem less daunting. Chanda scanned toward the pathway the starcraft had dredged in the ocean floor. Barely the length of the craft itself, it was still a substantial trench.

And it was full of that unknown lifeform. "This thing has already made its way back into the trench the starcraft dug when it crashed. It registers native Splendorian. It looks as if a single lifeform is covering the entire ocean bottom, or at least to the horizon."

Radford said, "I'm not surprised we haven't seen it before. The evacuation project has taken nearly all our time and resources."

Chanda said, "I'm sending my readings up above. They can try to figure some of it out while we continue on."

Ensign Durand said, "I've located a side hatch that seems to be clear of debris and undamaged."

Radford was looking at the same image, which had been computer-sharpened to compensate for the poor visibility due to the murky waters. "I'd like to attach directly to that craft's hull. We're expending a lot of energy just with-

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standing cross-currents."

Chanda watched as the submersible edged sideways toward the hospital starcraft. The initial touch was a gentle one, as a low tone resonated through the *Galathea*'s hull. Smart-tech would guide the edges of the hatch as they molded into a tight seal with the craft's hatch.

Radford said, "Seal complete. Now, another little precaution—done. Pressor fields are surrounding the corridor, so water pressure won't degrade the seal." Chanda moved toward the hatch between the command deck and the equipment hold. She told Radford, "I'll keep in touch by datalink if possible. But if you don't hear from us. . . ."

Radford said, "Captain Bram already ordered me to wait as long as I could, and no longer."

"Good luck to you," Chanda said to Radford and Durand, and went through the hatch. Lieutenant Tiernan and his three marine colleagues were waiting on the other side. Andrea Bartow had close-cropped blonde hair and a muscular form. Catarina Avery seemed to be a meditation on browns—burnt-almond eyes, sandy hair, mahogany skin. Haj Kontos was stout and swarthy. They wore standard Unity blues, with hand disruptors hanging from their belts. Tiernan had a versa-pack slung over his shoulder. The pack's nanite-driven tech could alter into any number of useful devices with a quick manual adjustment or even a verbal command.

Chanda went to Tiernan. "Remember our top two priorities."

Tiernan said, "Saving lives, then gathering information." Tiernan looked toward the other three marines and pointed toward the primary hatch. They moved to stand in a semicircle around it. Tiernan said, "Beginning entry attempt," and touched a control next to the hatch. Both inner and outer doors opened, revealing the short length of the submersible's embarkation corridor. Beyond was the hospital starcraft's smooth surface and its round hatch, which was only about a meter across and nearly flush with the hull. It stood about waist-height for Chanda.

Tiernan touched that hull. Chanda knew his personal sensors would take readings of the hatch's composition and any smart-tech within, and of the environment beyond it. "Near as I can tell, there's a Human-breathable atmosphere over there. And this area isn't flooded."

"The hatch isn't very wide," she said. "A tight squeeze for some of us."

Tiernan said, "The designers might have assumed anyone coming through would be in a zero-g situation. I can't get a clear reading on the size of the area inside. No way to know until we get in there." He unslung the versa-pack and held it before the hospital starcraft's hatch. A quick adjustment of settings, and he said, "The shrouds that act as sensor blocks are still up. Wasteful. And there's something . . . some kind of phase shift or something that I don't understand. Either way, they won't have any effect on anything material, including ourselves. This should burn through within seconds."

Tiernan was as good as his word, as the pack's nanotech altered itself into a disruptor that emitted a beam which precisely targeted the edges of the hospital starcraft's hatch. When it was cut all the way through, Bartow and Haj activated their lifesuits in full armor mode. Their bodies were now encased in silvery spacesuits, and their heads in clear helmets, allowing then to move forward to grasp the hatch without it burning them. She wondered, not for the first time, if she should consider having a lifesuit implanted. She'd always resisted by telling herself she wasn't really a spacer, and why should she go to the trouble? She endured the idea of medical nanites within her body, but something about having nanotech on permanent standby ready to snap into space armor at any moment was enough to give her the shakes.

Bartow and Haj grasped the hatch and

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removed it—

Revealing . . . what *looked* like a starcraft corridor. It went back about nine or ten meters, then branched off in two directions. Its walls displayed a series of repeating patterns that mirrored the yellow, maroon, and gold strokes on the ship's exterior. Chanda couldn't tell whether they were intended to be instructive or simply decorative. The ceiling of the corridor glowed with a muted yellow light.

And the entire corridor was a little less than a meter wide.

Chanda sighed in frustration. "I'd imagined the four of you storming into the ship."

Tiernan rubbed the back of his neck. "The ship's so big—it never occurred to me. . . ."

Chanda nodded. "—That its inhabitants could be this small."

Tiernan said, "Look at the floor."

Chanda realized many tiny feet had trod upon that floor; it displayed all the scuff marks and lingering dirt that prenanotech cultures had to live with even on the cleanest, best-kept walking surfaces. "Recommendation, Lieutenant?"

"Forge onward, Ambassador. Otherwise we head back to the surface, and learn nothing. Certainly we don't have to worry about a horde of angry Sobrenians coming down the corridor after us."

"How long will we have inside?"

Tiernan said, "The *Angra*'s the limiting factor. It'll have to return to regenerate in less than half an hour."

"Let's see how far we can get in about fifteen minutes, then start back here. Shall I take up the rear?"

"We'll make that Avery's job. I'll be right in front of you."

Chanda took her place in front of Avery. "Let's go."

Tiernan said, "Haj, then Bartow. Let's move."

Haj and Bartow were still in full armor. Haj reached out his left hand to grasp the edge of the hatch and gasped when the hand was pulled down so hard that it nearly struck the corridor's floor. Haj said, "That's some grav. Over one and a half, I'd say."

Chanda said, "That'll tire us quickly."

Tiernan said, "Splendor's 1.3, and we've been training under that whenever we're down here. Besides, having grav implies working inertials. Makes it more likely we'll find survivors."

Haj vaulted himself into the waist-high corridor and began to crawl down it. Bartow followed.

Chanda waited her turn as Tiernan, still unarmored, slung his versa-pack over his shoulder and eased himself into the narrow corridor. It wasn't easy when Chanda's turn came. She had to leverage her upper body into the hatch stiff-armed, then struggle to wriggle her legs into the narrow corridor. Avery helped out by grasping Chanda's ankles and giving a good push. "Thanks," Chanda muttered.

About all she could see as she crawled forward on hands and knees were Tiernan's boots rhythmically gliding forward. She heard equipment rattling and the occasional grunt from someone ahead.

Haj must have made it to the intersection and gone right. Chanda couldn't see how far this new corridor stretched. They'd only been crawling for three minutes.

Chanda bumped her head against Tiernan's boots as he stopped short. She heard a chittering sound ahead, something wild and shrill and . . . Chanda instinctively knew that sound represented hundreds, maybe even thousands of beings. Cold fingers walked up her spine and she wished she could stand upright and run. They might be facing an enemy unknown in power or number, and they were effectively immobile. Did the fly fear the spider in this manner? Or Humans about to be overrun by the collective species called the Jenregar?

Haj's voice came back: "The corridor's widening. Where all that noise is

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coming from. I've never seen beings like these."

Despite her fears, Chanda wished she could rush ahead of the three marines ahead of her. "What kind of beings? Sobrenians?"

"No," Haj said. "They're small. Close to the ground. Some of them are separate . . . and others joined together."

Chanda shook her head at Haj's minimalist description. "Can we move into that room? Do they look menacing?"

"They have round bodies. I'm poking my head out of the corridor now. They're looking at me. Two eyes . . . no, maybe three, spaced around the edges. But, uh, no, ma'am, they don't look menacing."

"Then can we move forward, please? This is where I might manage to be useful."

Haj and Bartow, still armored, then Tiernan, crawled forward and moved into the widened part of the corridor. Chanda followed, with Avery right behind. Chanda's first impression was of a broad area just tall enough for the five of them to stand upright, and of new colors for this starcraft—the walls glowed a soft greenish-blue. Five of the now-familiar narrow corridors branched off on the far side of the area, about thirty meters distant.

And the place was filled with beings, perhaps thousands of them.

Haj was right. They were small and close to the ground. Each individual stood on four spiny legs resembling those of an Earthly starfish, and none of their roundish bodies topped out at over half a meter. They had no heads, but a total of four eyes, spaced equidistantly around the sides of their bodies, which seemed to average about .75 of a meter across.

The beings had a suckerlike organ on the side of each leg. Some of them had extended legs toward an adjacent being and joined themselves together.

The chittering sound came from those who remained individuals. Many of them were rubbing two spiny legs together. Presumably if you tried that trick while joined to another, you'd topple over. As it was, Chanda was impressed by these beings' sense of balance—as many were rubbing legs across their bodies as were rubbing adjacent legs.

And virtually every one of them had at least two and sometimes three eyes trained upon the Humans. "Seems like we're the talk of the town," Chanda said.

That was when every one of the beings not already joined together simultaneously scuttled closer, extended a leg, and joined with another. "Whoh," Chanda said, and instinctively took a step backwards. Tiernan and his marines stood their ground. Their fingertips touched their disruptors but they did not draw them.

"Easy," Tiernan said. "Risk protocols apply." That last phrase, Chanda knew, summed up the most dangerous—and important—decision Tiernan could make. Essentially it meant to take the risk that the other guy might shoot first. Better for Humanity as a species, to be a conflict's first casualty than to precipitate such a conflict yourself. It was a policy that many in the military complained bitterly about, saying it ran counter to all their training and experience. But when the course of all future relations with an entire Galactic species was at stake. . . .

Once joined, none of the beings moved again. And since they couldn't rub their legs together now, all had grown quiet.

Avery muttered, "What're they doing?"

Tiernan said, "Calm, please. Remain still. Their call."

But nothing happened. All the thousands of beings before them remained still as stones, and just as quiet. After about a minute, Tiernan caught Chanda's eye. "Ambassador?"

"I have no idea what they're up to. Perhaps some sort of telepathic link, or they're somehow . . . communing emotionally. They don't look big enough to

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be intelligent, by most of what we know about sentient life-forms." Chanda checked the time. "We have about eleven minutes left."

Tiernan said, "Within about six we'll have to start back to the *Galathea*. If that's what we want to do."

Tiernan asked, "Ambassador, if we had a problem in here, what could the *Galathea* do about it?"

Chanda said, "A quick evacuation."

"You see these beings, ambassador. Given their small size and their obvious quickness, could we outrun them in these corridors?"

"I suppose not."

"Could we kill or disable the many thousands of beings present before we were overrun?"

"You mean do we have the ability? No. Never mind the morality of it. But the *Galathea* could go for reinforcements."

"Reinforcements that it could fetch much more quickly if it were standing by on the beach. It can return in about three hours, if it gets back to the beach and doesn't expend any more power in that time."

"Then I recommend we let the *Galathea* go, and we continue this contact."

Bram's voice interrupted over Chanda's datalink. "Ambassador, are you certain about this?"

"We have Sobrenians here in danger, and I think we need to help them. Though they haven't appreciated it so far. I'm also standing here staring at several thousand eyes staring back at me. I have to wonder what the intelligences, if any, behind those eyes would make of this conversation. And I'm very aware that time is running out for us. I think the risk is justified."

Bram's voice was sterner now: "Chanda, yes or no will do."

Chanda took a deep breath. "We'll stay."

"Good," Bram said. "First of all, *Galathea*, lift."

Chanda could hear Ensign Radford's reply over her datalink: "Lifting, Captain."

"Thank you, *Galathea*. Lieutenant Tiernan, you know what to do."

Tiernan took a quick step over to Chanda and a cylinder in his hand hissed against the side of her neck.

Four

Chanda grimaced and slapped her hand to her neck, but Tiernan's hand was gone. Chanda felt as if she could perceive the nanites she knew were coursing through every artery and vein, every organ in her body. Her temples pulsed with sudden pain and sweat popped out on her brow and stung her eyes. She felt feverish and her stomach and bowels threatened to rebel.

Her knees weakened and she remained standing only because Tiernan grabbed her arm and supported her. Her voice was a hoarse rasp: "I wish I believed in a god, Tiernan, so I could have it damn you."

Tiernan said, "You can request a court-martial upon our return, Ambassador. If we get out of here alive. For now, just remember you can press your left middle finger into your palm, and your lifesuit will envelop you. If you're exposed to vacuum or immersed in water, it'll activate on its own."

Chanda could only vaguely perceive Tiernan's features through a haze of tears. In the set of his jaw and the unforgiving steadiness of his gaze, she saw both the disdain the military mind often had for diplomats and politicians, and the determination that just might keep them alive.

Chanda pulled her arm from Tiernan's grasp. "Tell you what—you get us out of here alive, we'll forget about any court-martial."

Tiernan's forehead furrowed and the edges of his mouth drew down. "Ambassador, Captain Bram insisted that you couldn't remain here without the implant. His words were, 'now tell her

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she's a frontier ambassador with a lifesuit.'"

"Don't apologize for doing your duty, Lieutenant. Now, if you could give me a recommendation for our next action?"

Tiernan glanced at the thousands of joined beings before them. "I'd say our first priority is finding a way to communicate with them."

Chanda shook her head. "I don't know how to do that."

"Then Ambassador, we have to press on. See what else, and who else, we can find."

"Domerlan's the key here. He's supposed to be in charge."

Avery sniffed in reaction. "To hear him tell it."

Chanda said, "Whether he is or not, it'll tell us something about what's going on here. Lieutenant Tiernan, what would you think of trying to move past these beings, so we can look for Domerlan?"

"I think it's an excellent idea. Haj—Bartow—you'll stay here. Remain armored. Guard our backs. Let us know if any of these beings follow us further into this craft. And remember the protocols."

"Aye, sir," both marines said simultaneously.

"Avery, you're with us. Ambassador, I'd suggest either corridor closest to the edge of this wide space here. That way we can skirt this group of beings."

Chanda said, "I suppose you're leading the way."

Tiernan said, "I wouldn't have it any other way," and moved to the right, around the joined beings huddled in the center of the room. She stayed right on Tiernan's heels, aware the whole time of the many eyes tracking her, Tiernan, and Avery. None of the beings, however, made a move toward them, nor uttered any of those chittering sounds.

Tiernan reached the first corridor and made a half-salute to Haj and Bartow, then crawled into it. Chanda followed, Avery right behind. The yellow-maroon-gold color scheme had returned here, glowing in a pale luminescence from the very material of the corridor.

For the next several minutes they made their way down the corridor. Chanda's neck grew tired from holding it up constantly to see ahead. And even that seemed silly to bother with, because Tiernan's feet, knees, and elbows were the only view. Presumably the craft's natives could skitter quite efficiently down these corridors.

The passageway grew narrower. A great rumble roared down the pathway and Chanda felt her body sliding to one side. Then came a harsher movement, and her lifesuit activated, hardening against the buffeting her body was taking. She stopped cold. "What the hell was that?" Her voice sounded muffled inside the bubble helmet that had formed before her face. This was worse than the cramped corridor.

Over Chanda's datalink, she heard, "Captain Bram to Ambassador Kasmira."

"Kasmira here."

"Chanda, we're still getting data and pictures from the probe we've stationed next to that craft. Did it just move a little?"

"A little? Have you ever seen a dog grab a chew toy and shake it?"

"Chanda, it's that life-form that you saw at the sea bottom. It's *moving*. It's slow—took us awhile to notice what was happening. But it's enveloping that ship."

"What, like some kind of creeping vine?"

"More like an amoeba trying to eat it. Only it's stretched pretty thin. It's barely halfway up one side of the ship and it's nearly transparent. And moving much more slowly."

"Anything we can do to discourage it?"

"*Galathea*'s gone, and it's unarmed anyway."

Tiernan said, "This craft can't take much more of a pounding before parts of it start to break up. Especially since

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it's wasting power with shrouds and internal grav instead of working to hold itself together."

Chanda said, "While we're stuck like hamsters in a tube."

Tiernan said, "Let's keep moving. I think we're coming to another wide place in the road, so to speak." Chanda looked past him and saw a crimson glow ahead. Soon she and Tiernan and Avery, all of them still encased in their lifesuits, stood in a room that looked to be exactly the same size as the one where Haj and Bartow were waiting with the linked beings.

Something was different here, though, and Chanda realized she could see outlines of various shapes on the walls. There—a perfect circle nearly a meter wide, about ankle-high. Next to that, another outline that was . . . well, coffin-shaped was what came to mind first. Only it was a coffin for a giant about four meters tall. One difference in this room: on the other side was a single corridor, not the many branchings of the previous room.

Tiernan and Avery were also taking in their surroundings. Tiernan said, "I wonder what the hell this room is for."

Avery pointed toward several of the varied shapes. "What if those come out of the walls?"

Chanda said, "Some sort of equipment storage. Or—" She stopped short, when the cold realization came to her.

Tiernan said, "Operating tables."

Avery said, "This is a hospital starcraft, after all."

That was when the energy bolt struck Avery.

Chanda gasped with surprise and jumped back from the blue fire that enveloped Avery's lifesuit and swept repeatedly around her body. Avery screamed, and Chanda saw that the heat had pierced Avery's lifesuit, set her hair afire, and was blistering her face.

Chanda did the only thing she could do and hit the deck. Tiernan fired his disruptor pistol toward the opposite corridor, where Chanda recognized the blunt snouts and multi-colored robes of Sobrenians as they scrambled out—five in all.

Tiernan's shots would have hit home on a couple of the Sobrenians, except that personal energy shields flashed into existence in the instant Tiernan's bolts struck. The lieutenant quit firing but didn't lower his weapon. He kept his focus on the Sobrenians, who didn't show immediate signs of firing again, but also kept their energy rifles at the ready.

Avery's screams faded as she slumped to the floor. The blue flame was dying out, leaving a woman still inside her spacesuit armor whose hair had burned away and whose face and neck were blackened and bleeding. Chanda could tell Avery's injuries were far beyond anything the nanodocs flowing through her bloodstream could repair.

"Ambassador," Tiernan hissed, "try to go back. I'll distract them as much as I can."

Then Haj's voice was urgent over the datalink. "*Lieutenant—Ambassador. Should we. . . .*"

"*No,*" Tiernan said. "I'm sending the ambassador back. Your priority is to keep her safe until—"

Chanda said, "Until what? Someone rescues us?" She pointed toward the Sobrenians. "You've done your best. Now let me try to work this out. This is what I *do*."

Tiernan lowered his disruptor. "Go ahead. If they haven't killed us yet. . . ." He hooked his disruptor back onto his belt. A whispered command, and his versa-pack became a medkit. He knelt beside Avery. Chanda couldn't let herself think yet, *Avery's body*. It might not even quite be true.

Haj's voice came in again over the datalink: "Ambassador—Lieutenant—these beings . . . they're coming apart."

Tiernan said, "*Not now.*"

"Lieutenant, they're unhooking from each other and they're headed into the

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corridor. Should Bartow and I try to stop them?"

Chanda said, "What the hell else can happen?"

Tiernan was injecting a nanofluid mixture through the arm of Avery's suit. "It can't get much worse. I think I'd rather deal with them than the Sobrenians. Haj—Bartow—those beings should be here in less than a minute. Don't bother them, just follow as quickly as you can."

Haj said, "They're already gone, sir. We're in the corridor after them, but they're a damn sight faster than we are."

Tiernan said, "Do your best, marine."

Chanda turned her attention to the five Sobrenians. All of them were aiming their weapons directly at her. They all wore the many-layered robes which were the usual dress of their species. Their torsos were, on average, about three times as wide as a Human's, and the tallest of them barely came to Chanda's shoulders. Their eyes swiveled independently within deep sockets, over blunt snouts.

Only one Sobrenian wore a high-ranking officer's robes. Two different colors, red and green, were laced through his robes' primary color, which was a deep blue. The others' robes only featured a single color running through the primary color.

Chanda eased forward, pressed her middle finger into her palm to drop her lifesuit, and stood before that officer with her hands open. She said, "I'm Earth Unity Ambassador Chanda Kasmira. Your commander, Domerlan, has spoken with me."

The officer stepped forward and spoke. Chanda heard his translated speech over her datalink: "Commander Domerlan has spoken *of* you, as well."

Chanda couldn't help but notice the officer did not return the courtesy of identifying himself. *I'm a presentient.* Damn all these Sobrenians and their superior attitudes.

Hold on, Chanda, you're supposed to be a diplomat. Be diplomatic. For Avery. For the other innocents who may be trapped on this starcraft.

That was when Chanda heard the rumbling from behind her, and the incessant clicking sounds.

Dozens upon dozens of the small beings skittered out of the narrow corridor and headed directly for Avery's still form. Tiernan grabbed hold of her while trying to push the beings away, but they were too quick, and too strong. In an instant, a dozen of them had linked together and crawled beneath Avery's body. They lifted her up and carried her across the room, as if they were some sort of organic gurney. The Sobrenians just stared, and Chanda wished she could tell whether they were concerned or amused.

Then she saw Tiernan's hand on his disruptor and she slapped it down. "Remember? This is a *hospital starcraft.*"

"What are they going to do to her?"

As the beings carried Avery toward the far wall, a large oval outline about waist-high for a Human extended outwards. Chanda touched Tiernan's arm. "C'mon."

A metallic arm was pushing the oval shape outward. It *had* to be an operating table. For now, anyway, Chanda's mind pushed away the phrase *autopsy table*. It tilted over until it was ankle-high and horizontal. The beings slid Avery gently onto it, unlinked, and moved against the wall.

Avery's lifesuit deactivated. Her body was horribly burned and Chanda put her hand over her nose and mouth against the burned meat smell. She couldn't see the smallest patch of skin that wasn't blacked, blistered, or bleeding. Most of Avery's clothing had burned away.

At least she's unconscious, Chanda thought.

Now a different set of the beings moved forward. Chanda heard Tiernan gasp when two of them hopped onto the table and each extended a leg to rest

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on Avery's forehead. He muttered, "What are *they* going to do?"

Chanda said, "I think she has a better chance with them than . . . anything we could manage. Was she responding to your treatment?"

Tiernan blinked twice. "I was past treatment. Hoping only for . . . comfort." Tiernan looked as if he'd had the breath knocked out of him. When Haj and Bartow arrived, though, his features hardened and he quietly issued orders. Both marines flanked the entrance they'd just used to enter the room, hands at their sides, impassive as suits of armor.

A voice over Chanda's datalink: "I said Domerlan has spoken of you."

Chanda turned. The damn Sobrenian officer, with his troops right behind him, continuing the previous conversation as if nothing had happened. "You must excuse me," she said. "I realize I'm only a Human, but Domerlan must have explained to you that we act as if our perceptions matter, as if we were sentient."

She was thankful that for once both the Sobrenian's eyes remained centered on her. "Domerlan has indeed referred to this tendency. But the Buruden are treating that Human now. You may speak with me."

"These beings are called the Buruden?"

The Sobrenian cocked one eye toward the operating table and Chanda looked that way. The Sobrenian said, "They'll save her if she's capable of being saved." More of the Buruden had hopped up next to Avery. Their thin legs worked furiously. The Sobrenian said, "I am Sub-Commander Woradon."

"Well, Sub-Commander, I'm here hoping to rescue everyone on this starcraft, no matter their species—Buruden, Sobrenian, anyone else. But if any Sobrenian fires upon any Human again without provocation, Earth Unity personnel will render no aid whatsoever to Sobrenians."

That got both eyes trained on Chanda. "That could be a dangerous decision."

"I realize it's probably unsound militarily, because it could supply the provocation I implied was the only excuse for Sobrenian violence. However, the result will be the same. You will die, and so will the other Sobrenians aboard." Chanda tried to be clear-minded about Sobrenians, though she recognized her prejudices against them. As much as Humanity saw the species as violent and irrational, she knew Sobrenians considered themselves to be, as her Russian father might have said, "cultured." This commander would be as distressed as Lieutenant Tiernan was about Ensign Avery if one of his troops were as severely injured.

"My troops are unaccustomed to dealing with presentients."

Chanda said, "And when you say 'dealing with,' I presume that means in a manner other than simply telling them your demands and having them carried out."

"My troops wished to reassert themselves as weapons carriers."

"And that's why they shot Avery." Chanda thought, try to make sense of Sobrenians. It *did* explain why the other Sobrenian took a shot at her even after the *Nivara II*'s shuttle rescued him from the Great Sea.

Tiernan spoke up. "Ambassador . . . it's Ensign Avery." The Buruden surrounding Avery hopped to the floor and joined together again, this time in a semicircle around the table, as if awaiting Chanda and Tiernan's approval of what they'd done to the injured ensign who was lying naked on the operating table.

Chanda was more than willing to give that approval. Though Avery was still unconscious, the Buruden had worked miracles. The woman's skin was a bright red, as if she'd been out too long under a harsh sun, but showed no signs of burns. It was such an unexpected sight that Chanda instinctively reached out to-

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ward Avery's face, then hesitated. The woman seemed so fragile; her eyes were closed and her lips were slightly parted.

Chanda contented herself with pressing her fingers gently against Avery's cheek. The skin was a little too warm, as if she were recovering from a fever. Now that Chanda had actually touched Avery, she was struck by another strange thing: the woman smelled good. Her skin had a fresh, new quality to it, like a baby's.

She looked at the Buruden, and a great many eyes stared back. She said to Tiernan, "We owe them a great debt."

Tiernan's eyes were slits and his skin was pale. "Is there anything Humans can do that other Galactic species can't do better?"

"Beg your pardon?"

"The Sobrenians have better weapons. The Buruden can save a woman I'd assumed was near death."

"We're a young species, Lieutenant. What these beings do, they do well. The same as you." Chanda watched as Tiernan pressed his lips together and stared at the floor. Chanda felt she was seeing a different man from the one she'd known these past couple of months.

That didn't frighten her—what did was, she couldn't tell *how* he was different.

Five

Woradon approached Chanda. "Ambassador, you've explained how presentients do not respond in the manner that Sobrenians see fit. Could I ask you, however, to respond in such a manner just one time? I wish to take you to see Domerlan."

"Oh! That's why I'm here, Sub-Commander."

"We will go now," Woradon said, and started off toward the far entrance without looking back to see if Chanda was following. She told Tiernan, "You stay here with Avery. I'll take Bartow."

"I'm in charge of your safety."

"You're no less in charge of Avery's. I'll be fine. Domerlan knows me."

Tiernan's eyes were haunted. "Bartow—you're with the ambassador."

"Aye, sir," Bartow said, and she fell in step behind Chanda. Sub-Commander Woradon and two of his troops were waiting beside the corridor entrance. Chanda didn't know enough about Sobrenian expressions to tell if he was being impatient. If so, too bad.

Woradon's two troops preceded him into the corridor, then he followed. Chanda wondered how the Sub-Commander enjoyed such crawling around. She couldn't help but notice as she and Bartow followed them, however, that Sobrenians were better equipped for it than Humans. They were shorter, and Chanda saw now why they typically went unshod—their feet and long toes were nearly a second set of hands when needed, making them decent quadrupeds. Chanda felt like a slug by comparison.

Soon Chanda was in another room, as wide as the operating room, but with even lower ceilings. Its walls were the same soft greenish-blue as the first room they'd encountered, but it was much darker. A pair of corridors branched off across the room, darker still.

A familiar voice in her datalink: "You have found Domerlan."

Chanda peered into the darkness. The walls were lined with operating tables as the second room had been. Or would they be recovery beds here? Did the Buruden even make such distinctions? No matter—Domerlan was lying on one of those beds across the room. It was the only one extended outward from the wall.

Chanda looked at Woradon, who stood stiffly, as did the other two Sobrenians. Chanda motioned for Bartow to remain where she was, and went to Domerlan.

The last time she'd seen him in person, Domerlan was commander of the proud Sobrenian starcraft *Melareon*. He'd worn colorful robes of iridescent

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green with faint red and violet threads that proclaimed his rank.

Now Domerlan stared up from a bed, naked. His left eye socket was empty, the left side of his body was horribly scarred, and his left arm ended above the wrist.

Chanda looked down at him. "What happened to you? Are there any more Sobrenian casualties?"

"Only the dead. Too many. Twenty-two. Sixteen survive, including myself. Now all that's important is that you save them."

"I have to know what's going on. You refused to talk with me after our initial conversations."

"I spoke with you sufficiently, especially for not-in-person."

"We're in a starcraft three kilometers long and I find you in the third room I encounter. You must have had your people bring you here to speak with me."

Domerlan's one-eyed gaze left Chanda and stared toward the low ceiling. "The Buruden disabled the *Melareon*. Disabled! No opportunity to demonstrate our superior artistry. They boarded the *Melareon*, brought me and my crew to their craft, but did not understand that individuals could possess weapons. We rebelled, we tried to take over this craft. I was injured then. Will you help my crewmembers?"

"That's always been my intention, though I don't know why I should. One tried to shoot me, and another nearly killed one of my marines."

"Regrettable, Ambassador. Their orders are otherwise now."

"You'll issue orders—surrender your weapons and prepare for evacuation."

Domerlan's body shook and he raised his remaining hand in a weak but defiant fist. "The *weapons*—never. Would you, in your misplaced pride, surrender your child?"

Chanda bit her lower lip to keep from entering into a useless litany—she didn't have children, the analogy was a false one—none of that mattered, given the central role of weaponry to Sobrenian culture. "How about this—you keep the weapons, but my marines remove their power sources."

Domerlan's hand fell back to the bed. "Acceptable." Domerlan's single eye swiveled to look at Chanda again. "You see my species as cruel and heartless toward all others. From a certain point of view, perhaps we could be perceived that way."

"My experience with Sobrenians is limited, but consistent." The floor shook, and Chanda grabbed the edge of Domerlan's bed. The shaking went on for nearly half a minute. Chanda said, "There's something you're not telling me." A thin trickle of water flowed from the right-hand corridor of the two pathways that led into darkness. Chanda asked, "Is this ship still taking on water?"

Domerlan said, "The Buruden have repaired the major ruptures. Much of this craft, however, is flooded. You must help me negotiate with them."

"Why haven't you taken over operation of the starcraft?"

"There is no need."

"That tells me you *can't*. I'd say you need them to operate the ship."

"I wish other Galactic species did not attempt to mimic sentience. There's no need for Sobrenians to operate Buruden equipment. I command."

Chanda told Domerlan, "Soon you'll command a crushed ship and a dead crew. What did the Buruden do?"

"Much worse. I admit my shame only for the benefit of my people. They forced us into—a *truce*."

"How?"

"You've seen how they link together to serve certain functions. The more individuals that link at a particular moment, the more intelligent that grouping is."

Chanda said, "That explains it! I'd wondered how beings so small could be sentient." Her thoughts flashed back to all those eyes regarding her as she

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walked past that joined grouping. "If you kill too many Buruden, there won't be enough to generate enough intelligence to operate the ship. So what do they want?"

Domerlan said, "Help me up. We must speak to all the Buruden."

"How will I make them understand me?"

"They'll be able to communicate with you soon after they arrive. Sub-Commander Woradon will bring them."

Woradon and the other troops entered the left-hand corridor. Domerlan said, "I wish to stand. You will help me." With Chanda and Bartow grasping Domerlan's upper arms, the Sobrenian rose unsteadily from his bed. Chanda realized that water was starting to puddle all around them. The trickle from the one darkened corridor had become a constant stream.

Within moments, Woradon returned. As he crawled out of the corridor, he splashed into the shallow waters covering the floor. Then, for an instant, Chanda feared that the ship's structure had failed, and that a torrent of water was rushing into the room.

But this was a flood of *beings*, as Buruden by the dozens, the hundreds, poured outward.

Chanda instinctively stepped back as the small beings soon lined the floor all around. All their eyes appeared to be on Chanda as they linked together.

Which meant this was the most intelligent grouping of Buruden they'd yet encountered. She didn't know whether to be grateful or frightened. The two Sobrenian troops who had accompanied Woradon into the dark corridor emerged and stood by the entrances to both corridors.

The Buruden nearest Chanda reached up a leg not attached to the others. Domerlan said, "You must bend down. Let me go. I can stand with your marine holding me."

"What's about to happen?"

"It is necessary. That is all you must know."

Chanda shook her head in frustration. Just once she'd like a straight answer from Domerlan! All the same, she bent over. Four Buruden eyes peered into hers. The Buruden extended that unattached leg upward, behind Chanda's head.

A sharp pain lanced through Chanda's neck, behind her left ear. She flinched and stood upright, slapping her hand where the Buruden had stung her.

Where her datalink was implanted.

She looked down at the Buruden individual, and saw, at the very tip of one leg, her own blood staining one of the spines. "What the hell was that about?"

That individual detached from the other Buruden and two eyes on one side examined Chanda's blood. The stained limb rubbed against another as the Buruden balanced on the other two.

Within moments the bloody spine was pristine again. Chanda looked at Domerlan. Chanda thought he was standing straighter and not leaning as much against Bartow. She asked him, "Was that their way of taking a DNA sample?"

"Perhaps that as well, but the primary goal was to touch your datalink." Domerlan paused while the craft rumbled and shook, then stilled. "The touch suffices. Your species—and my own—are unfortunate in having our datalinks implanted. An external link would not have required bodily invasion."

Chanda felt behind her ear again. A thin stream of blood had dried against her neck.

Bartow spoke up. "The scary thing, Ambassador, is that the spine didn't activate your lifesuit."

Chanda said, "They're more advanced than we are in some ways."

Domerlan said, "I cannot understand a species that can make such an admission so easily."

Chanda was about to forget she was an ambassador and give Domerlan

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what-for when a new, unfamiliar voice sounded through her datalink. At the same time she heard the Buruden chittering sound from behind her. "Your name is . . . Ambassador?"

Chanda turned her back on Domerlan and faced the mass of Buruden before her. She looked down at the individual that had stung her and said, "No, 'Ambassador' is my title. It's what I do. My name is Chanda Kasmira. And is this who I think it is?"

The one Buruden worked two legs together, and Chanda heard, "You would call us the Buruden."

"You are the beings who operate this hospital starcraft."

"It's not precisely a hospital craft in the manner in which you use that term, but it's a close analogy. And we do operate it. We treated the Human the Sobrenians injured. We apologize for the pain we inflicted in examining your datalink. That action revealed the details of your language to us."

"Do you have a name as an individual?"

"We know who we are."

Chanda had to ask something else, because she found she was thinking of this individual as an "it," and she wasn't comfortable with that. "Does your species have sexes—male, female, or another combination?"

"Apologies. Those are scientific concepts to us, not personal."

OK, Chanda thought, "it" will have to serve. "Your craft is about to be destroyed. It's not built to withstand water pressure."

"This craft should have been crushed long ago. We don't understand how it still survives."

"Also," Chanda said, "a life-form seems to be trying to envelop this craft."

"A life-form? Are we certain we understand? You are not speaking of a—" And here Chanda's datalink failed her, offering her as best guesses either "plant" or "vegetable" as possible translations. Such categorizing of flora or fauna often broke down given different worlds' varying biological histories.

Chanda said, "I'm speaking of a life-form with enough intelligence to decide to examine this craft."

"It could be instinct."

"Except that it would be obvious by now to that being that this starcraft is neither food nor a mating partner. I believe curiosity motivates it." Chanda thought she detected a ripple going through the mass of Buruden before her. "Are there more lifepods aboard this craft?"

"There are, but only for beings the size of the Buruden. The Sobrenians also expended all our excess energies in opening an exterior hatch against the water pressure."

Domerlan said, "My orders were to seize a craft that my troops would use to rescue the others of my species."

Chanda decided she'd had enough, ambassador or not. Her left hand darted out and grabbed the undamaged right side of Domerlan's head and made him look at her. "Your people tried to kill me! They've tried to kill one of my marines and nearly succeeded."

Domerlan's single eye regarded her with a deadly gaze. "You will let go of me."

Chanda squeezed harder. "Make me."

Bartow stepped back and Domerlan's remaining hand rose slowly from his side, but shook uncontrollably. He lowered the hand.

"Is this what the Buruden did? Stopped you cold?" Chanda glanced back at Woradon and the other two Sobrenians, who were still standing by impassively. "I notice your troops aren't trying to keep me from harming you. Are they looking at a change of leadership? Is Woradon waiting for you to die?"

"Sobrenians do not exchange power in such a manner. That is for lesser forms."

Chanda let go of Domerlan's head. "These lesser forms are about to save

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your life."

Chanda addressed the single Buruden who had tapped into her datalink—she thought of it as the species' ambassador. "You said the Sobrenians used up all your excess energies. But what about the shrouds you've maintained?"

"We lowered them once our craft settled onto the ocean bottom."

Chanda shook her head. "We've made sensor sweeps since then. They're still up."

The Buruden ambassador's middle eye of the three looking at Chanda stayed focused on her, but their neighbors on either side turned back toward the mass of Buruden. They all chittered in a quick exchange that Chanda's datalink did not translate.

The Buruden ambassador said, "Ambassador Kasmira, our shrouds were dropped long ago. We've checked and confirmed this."

All right, Chanda, set that aside for now. "Can you cancel the internal gravity?

"This is the minimum gravity we feel comfortable in. We cannot tolerate zero-g conditions, and even gravitation less than the craft's current levels makes us quite ill."

Damn, Chanda thought. I can't get a single break. She asked, "Do these pods have any kind of internal grav?"

"They do not." Chanda wasn't surprised. No known Galactic species had the capability to induce gravity in a mechanism that small.

The Buruden ambassador continued: "These pods are a last resort, given the illness that overtakes us in zero-g. And only eight of us can fit within each pod. That gives us only enough sentience to be as aware of our illness as an animal might be. Each of us receives the comfort of the others within the pod."

"So we could use the energies spent maintaining gravity to eject the pods?"

More untranslated chittering, no doubt the ambassador consulting with the other Buruden. "Yes."

"Will it take long to get to the pods?"

"Not if we transport you."

Chanda traded glances with Bartow, who asked, "What does that entail?"

Just as Chanda was thinking Bartow shouldn't have asked, a group of about a dozen Buruden detached itself from the rest and, with amazing speed, darted over to Bartow. Several grabbed her feet and jerked them out from under her. Even as she yelped her surprise, the other Buruden gathered beneath her to bring her upper body gently down. Then they manipulated her around so Bartow was lying on her stomach atop their flat upper bodies.

Then, more quickly than Chanda could have imagined, the Buruden bolted into the right-hand corridor, from which a thin trickle of water still flowed.

Chanda's heart pounded and her eyes grew wide as the next set of Buruden advanced steadily toward her. "Oh, no," she said. "Besides, there's Domerlan. He can hardly stand on his own."

So the Buruden took Domerlan first. Chanda only delayed her own fate by ten or twelve seconds at most, before she found herself hurtling head first and face down through that darkened, wet corridor. For a full fifteen minutes, all Chanda perceived was the sound of dozens of tiny Buruden spine tips splashing through water, raising a misty spray that dampened her face. She couldn't rub that moisture away; the Buruden had too strong a hold on her arms.

Finally, she sensed the Buruden were slowing. She assumed another wider, taller area such as the operating room and recovery room was just ahead.

Her assumption was half right. The Buruden halted, placed Chanda face down on the floor, and skittered away. She took a deep breath, kept her eyes on the floor. Yellow-maroon-gold. Oddly comforting.

When she got her knees and elbows beneath her and made to stand, howev-

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er, she bumped her head. Not hard enough to activate her lifesuit, but surprising all the same.

Chanda kept her head level and brought her gaze upward.

Except for the floor, the room was a deep blue, and honeycombed with corridors every few meters. It was just as wide as the previous rooms they'd encountered, but little taller than one of the corridors.

Domerlan was lying to Chanda's right, Bartow to her left. The Sobrenian guards were nowhere in sight. The Buruden had all joined together again, and their ambassador stood right in front of Chanda's face. Its stance was such that three eyes pondered her. She noticed that Buruden eyes blinked very slowly, and that their lids moved from side to side rather than up and down. Not nearly as bad as the Sobrenians.

Chanda asked the Buruden ambassador, "Is there no place where someone of my height can stand?"

"Not in the lifepod area. The earlier places you saw are often used for therapy, and when we treat life-forms of extreme height it is useful for them to be able to stand and walk about."

"You didn't bring the other Sobrenians along?"

"We've discovered that fewer Sobrenians create more advantage."

A proverb I'll live by from now on, Chanda thought. "Show me one of the lifepods."

It was a ten-meter crawl to the thousands of dark blue pods at one end of the room. The Buruden parted before her.

Another low rumbling went through the starcraft, and with Chanda crawling on its deck, she could feel it to her bones. She looked at the first pod before her and multiplied her claustrophobia by at least a factor of ten. Coffinlike didn't begin to describe it. A child's coffin, perhaps, or a Sobrenian's. She relinquished any ideas of comfort or of taking any action once inside the pod. Fortunately, it would only be a few minutes at most before you got to the surface, assuming you weren't stuck beneath the new ice forming over the hole the starcraft had made.

The Buruden ambassador always held out at least one leg to maintain contact with the others. It said, "You are larger than the Sobrenians, and they could not fit themselves within."

Chanda muttered, "I'm going to give it a shot." She crawled over to the pod, which was the same deep blue as the surrounding room. She thought, It's actually hard to make the damn thing out against its surroundings.

The Buruden ambassador let go of its colleagues and skittered over to the pod entrance. A touch of a spine, and a hatch on one side opened so abruptly that if Chanda had blinked, she'd have sworn it disappeared. Wouldn't want that to close on my foot, she thought. She grabbed the edges of the hatch and pulled herself in head-first.

Six

Getting breasts and hips through the entrance was problematic, even though Chanda knew some Humans considered her figure "boyish." She didn't even want to think about the bruises she was getting. The same deep blue dominated here in the pod, with the only light source being tiny readouts, nearly pinpoints, nearly at deck level. The pod had no ports or viewscreens.

Chanda bumped her head against the pod's far end, and her legs from the knees down were still outside. So, draw up the knees—damn, got to watch getting those shins past the hatchway—and pull the legs inside.

Certainly it had been difficult, but she'd squeezed herself in. Why couldn't the smaller Sobrenians fit?

Chanda's heart jumped when the hatch zoomed shut as her feet cleared the entryway. Entombed in this alien lifepod, she was utterly helpless.

The hatch opened and the Buruden

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ambassador peered in with a single eye. "We must apologize for alarming you," it said. "The hatch is an automatic function when the pod realizes it's filled." The ambassador showed her a small round panel to press to open the hatch herself.

Chanda skinned her shins again as she unfolded herself and stuck her legs through the hatchway. Bartow was there suddenly grabbing her ankles and pulling until they were both lying next to the pod again. "Watch it, marine, we're not popping a cork here."

"Sorry, Ambassador. What's the plan?"

Chanda looked around and saw Domerlan, sitting propped up against a wall, glaring at her. She turned to the mass of Buruden and addressed their ambassador. "I'd like to get the Buruden into position as soon as we can. Your species is the most comfortable within the pods. Then we'll put the Sobrenians aboard, and—"

"You will not!" Domerlan's translated voice boomed over Chanda's datalink. To her amazement, the Sobrenian was crawling across the deck toward her. Chanda said, "You can't be so ashamed over losing a battle that—"

"It is *not* losing the battle that is the shame. The weapons are our shame. They were beautiful, and though the Buruden do not even hold weapons, they defeated ours. We gave proper challenge."

The Buruden ambassador said, "They attacked our homeworld with no warning."

Chanda found herself flush with anger. She asked the Buruden, "Did they use automated disruptor craft?"

All the Buruden chittered at once. "They did!" was the translation.

"Craft that arrived in a stardrive jump close to your planet?"

Again: "They did!"

Domerlan said, "Splendor lies between the Sobrenian and Buruden homeworlds."

Chanda said, "That's why you picked Splendor for weapons testing."

"It was convenient."

"And you can go to hell."

Domerlan glared at Chanda with his undamaged eye. "My people only believe in hell. Your curses cannot make things worse."

"If that's so, Commander, why do you insist upon sending your crewmembers there prematurely? Wouldn't you want to prolong their lives?"

Domerlan sagged to the deck. "I can try to guide them to that conclusion." The Sobrenian covered his burned and scarred head with his hands.

The deck rumbled beneath Chanda. The Buruden ambassador said, "We don't know how our starcraft has remained intact this long. We must leave."

Chanda said, "Get yourselves into the pods. Ensign Bartow!"

The marine was at Chanda's shoulder. "Yes, Ambassador."

"Talk to Lieutenant Tiernan. We're . . . what do you call it? Bugging out?"

"That's an appropriate phrase, Ambassador."

"Very good. You deal with gathering Humans together. I'll take care of the Sobrenians."

Chanda went to Domerlan and placed a hand on his uninjured shoulder. The Sobrenian raised his head and glared at her. She asked, "Can you gather your people?"

"Some will come. Some will not. This Buruden starcraft defended itself well against the *Melareon*'s attack. A *hospital ship*. Not even a warcraft. They pierced our shields and disabled our weaponry."

A rumbling and chittering to Chanda's left, and the remaining Buruden were arriving. Chanda had always thought the individuals forming a hive-mind species would appear to be automatons, marching in ranks. Watching the Buruden right now, it was clear her impression was mistaken. They were detaching themselves from their fellow beings haphazardly, and scrambling aboard the many dozens of pods as if eager for win-

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dow seats.

Domerlan's hands clawed at the hard smooth deck as he watched the Buruden gather. "They are a *younger* species than we are. And presentients, such as yourself, who do not act as they should. Then they tried to convince my crewmates, as individuals, that it was in our best interest to surrender. As individuals! The Buruden ignored my authority."

Chanda said, "They're a collective species, Commander. If they haven't had that many first contacts, they may not understand that with individualistic species like Humans or Sobrenians, you approach the leader to accomplish something."

"It is we Sobrenians who've had little dealings with other species. Perhaps we don't want to have more."

"Commander, shouldn't your people live to take that message back to your homeworld?"

Domerlan's uninjured eye looked as if it were about to pop out of its socket. "That would be a convenience for Humanity, would it not? If Sobrenians simply left the stars to others?"

"I just want to save as many beings as I can, Domerlan. Please request your people to come to the pods."

"They cannot fit inside with their weapons. The hatch will not close."

"Would they rather die?"

Another rumbling, much stronger than before; and the ship's deck pitched enough that Chanda began to slide across it. Bartow grabbed Chanda's leg. The marine's other hand grasped the exterior of one of the pods.

Domerlan seemed to find reserves of strength and pulled himself against the downward slope of the deck to rest against the side of a lifepod filled with Buruden. He began to speak quietly, presumably over his datalink to the other Sobrenians aboard.

Chanda pulled herself next to Bartow and balanced herself against a lifepod. Domerlan came to Chanda and said, "I've told all Sobrenians aboard this ship to board these lifepods without their weapons. I'll remain aboard this craft and assume that shame upon myself."

Chanda said, "Domerlan, no! Do you have some sort of messiah complex, that you'd sacrifice yourself for your people?"

The Sobrenian commander glared at Chanda. "Some words did not translate properly. How could a god sacrifice himself? He who is all-living? You are so presumptuous. You wish to express your culture, which you have told me values all life. Yet I cannot express my own culture, my own way of valuing Sobrenian life?"

Chanda didn't have a good answer for that. Instead, she watched as Sobrenians crawled out of the darkened corridors around the room. To her amazement, they began stacking their energy rifles in neat piles and entering individual lifepods—a much easier task for the smaller Sobrenians than a Human.

Chanda recognized Woradon when he arrived—he was one of many officers wearing deep blue robes with red and green laced through them, but his snout was slightly flatter than the norm, his eyes wider apart. Woradon made his way over to Chanda, Bartow, and Domerlan on all fours—when they had to be; Sobrenians were decent quadrupeds.

Chanda asked, "Are all the Sobrenians coming here?"

Woradon said, "Most. A few have decided as Domerlan has."

Chanda wanted to plead with Woradon to convince the other Sobrenians that staying here and embracing a needless death was madness. But she knew better.

The other Sobrenians had gathered around the lifepods. Woradon went to them and barked orders. Movement to Chanda's right—Tiernan was backing out of a corridor, pulling Avery's still form into the room. Haj trailed behind, pushing Avery along. Chanda scrambled over to help.

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Tiernan said, "This was tough going without the Buruden to help us. They just ran off." Chanda was grateful, though, to see that the marine lieutenant was still in job mode, not complaining, just noting a fact.

Chanda said, "Let's get Avery into a lifepod. It's a tight squeeze. Then ourselves. We don't have much time." Tiernan supervised as Haj and Bartow placed Avery into a pod, in the proper near-fetal position. "Chanda to Captain Bram."

Over her datalink came the reply: "Bram here."

"Get ready to receive us."

Bram said, "Just be prepared to leave your pod when we tell you."

"Will do." Tiernan watched while Haj and Bartow squeezed themselves into lifepods. When they were done, Tiernan looked at her expectantly. "You know I'll wait right here until you're safely in a pod."

Chanda had to give him that. Better to get this done than bother with the argument.

She made herself look over at Domerlan one last time. The Sobrenian didn't return the favor, just stared into infinity.

Chanda squeezed into the pod again and waited. Finally, dull noises resounded from somewhere deep within the starcraft. The grav lightened, from the 1.7G's the Buruden grav had produced to the lesser 1.3 Splendorian pull. She wondered if the Buruden were already urping.

A gigantic screeching noise, and Chanda guessed that previously unseen pod bay doors were opening, with the energies that had gone to maintaining internal grav now being employed in keeping the rush of water back.

Chanda's pod began to move, gently at first, then with violent intermittent shocks. Then a collision that shook both the pod's structure and Chanda's skull. After that, smooth sailing. How long would it take to rise up 2.5 kilometer by the buoyancy of the pod alone?

Bram's voice: "Chanda, out of the pod. *Now.*"

Chanda pressed the proper panel, and the pod's hatch opened. Sea spray soaked her. Thunder rumbled. The hatch wasn't designed for a sea rescue, and had opened right at water level. The pod began to fill with water, and Chanda scrambled feet first, as quickly as she could, out of the pod and into the water, breathtakingly cold beneath gray-to-black skies.

Winds tore at Chanda's face. Clear of the pod now, she pressed her left middle finger into her palm and her lifesuit activated. It was "soft armor" only, a translucent energy field that would protect her against the elements and keep her afloat.

She was bobbing on relatively calm seas, with the surrounding waves only centimeters high, like a pond with a stiff wind blowing across. Where was the ice?

"Chanda?" Bram's voice.

"I'm here. What's happening? Where are you?"

"*Nivara II*'s about half a klick over your head. Don't bother looking up, we're in the clouds. You need to start swimming straight ahead of your position. We've widened the hole in the ice to make sure we take in as many lifepods as we can. The edge of the ice pack's not more than a quarter-K from you. Walk inland about half a kilometer, and the ice is thick enough we can land a shuttle."

Start swimming, then. "Have you heard from anyone else?"

Tiernan's voice: "I'm here, Ambassador. I've hooked up with Haj. We're looking for Avery's lifepod."

"Bartow here. I've found it. I'm near the edge of the ice. I'm pushing it that way. There's a bunch of Buruden at the edge of the ice forming a chain of beings that's grabbing onto the pod. They're pulling it up. Oh, hell, now they're pulling *me* up. I'm grateful for the help, but I think I'm more grateful I'm in soft

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armor. I'd hate to think what these Buruden would smell like or feel like if I were more exposed to them."

Chanda guessed what the problem was. "You mean—"

"That's right, Ambassador. They weren't lying about how sick they get. They're *covered* in their own throw-up. And making more of it even as I watch."

Within half an hour, Chanda was walking across the frozen seascape to where Tiernan, Haj, Bartow, and Avery's lifepod were waiting.

Along with nearly a thousand sick Buruden. Though they weren't a pretty sight, a number of them were more than eager to link together and carry the pod containing Catarina Avery.

Ten Sobrenians were also present, but seemed oddly subdued, and trailed silently behind the Humans and Buruden.

Another half-hour, and the *Nivara II*, *Angra*, and even the orbiting *Harding* were all sending shuttles to pick up the survivors. *Angra*'s submersible, *Galathea*, also arrived, and that's where Chanda and the other Humans headed for pickup.

As *Galathea* lifted to take Chanda back to the *Nivara II*, she made a mental list of quite unadventurous things to do.

Seven

Aboard the Earth Unity starcraft *Nivara II*, Chanda savored a hot meal, hotter shower, and ten consecutive hours sleep.

List complete.

Chanda sat beneath clear Splendorian skies, on a rocky outcropping that overlooked both the wide expanse of frozen seascape before her and the still-beached *Nivara II* below. To the southwest, a volcano oozed lava. When the winds changed just right, Chanda found her eyes watering from the stench. Splendor's primary, Pinpoint, hovered at the horizon.

The orbiting Unity starcraft, *Nigel Harding*, had just notified Chanda of its latest sensor findings. One was expected. The other was a shock.

The first finding: the Great Sea's waters had finally crushed the Buruden hospital ship. Chanda looked toward the western horizon, her imagination taking her beyond it, and beneath the Great Sea's waters. At least Domerlan's sacrifice had saved other Sobrenian lives.

Chanda had to wonder whether the Sobrenian threat to Splendor could actually be over. Woradon was demanding safe return for himself and his people to the Sobrenian homeworld, and Chanda saw no legal reason to deny it, but what message would they take with them?

The *Harding*'s other finding: a closer examination of sensor records from the submerged probe indicated the so-called carpet being covering the ocean floor had *not* been trying to crush the Buruden starcraft. Even the Buruden had wondered at the time how their ship was managing to hold together. That being had exerted its pressure *outward*, presumably to protect the craft for as long as it could. Fortunately for Chanda and the others, that had been after they'd made their escape.

It's at least as aware as a Saturnian floater flashing greetings at the crew of a deep-probe, Chanda thought, or a dolphin helping an injured swimmer back to shore.

The implication was clear: *a third sentient Splendorian species.*

The carpet being (they'd *really* have to come up with a better name for it!) had even mimicked the Buruden ship's shrouds as a function of its own central nervous system. That also explained why the being itself hadn't been detected earlier. More refined sensor sweeps now showed that particular being was hundreds of kilometers wide, and that dozens of them were scattered about Splendor's ocean bottom.

You sure as hell couldn't take such an entity off-planet. Difficult enough to find

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a new home for valley dwellers and highlanders, given their specific and narrow ecological niches, but this species!

Chanda sighed. She had a headache that was defeating even her personal medtech.

Boots ground against stone. Chanda looked up. Lieutenant Lewis Tiernan. "Ambassador."

"Lieutenant."

"May I sit next to you?"

"Feel free." Chanda moved over and Tiernan sat, looking out at the frozen seascape. She wondered what was on the lieutenant's mind. Tiernan's features were hard, pinched, as if keeping harsh emotions in check. Pinpoint's final rays washed over his face, turning it blood-red.

Chanda asked, "How's Avery?"

Tiernan's eyes brightened at the mention of her name. "Back on duty tomorrow morning."

"That's good," Chanda said, and watched as Tiernan's features clouded over again.

"No reason I shouldn't get right to the point," Tiernan said. "I've resigned from the Unity Marines. Just told Captain Bram."

Chanda's eyebrows raised involuntarily. "Why?"

"The Unity has to deal with these aliens." Chanda winced at the word never uttered in diplomatic circles. Tiernan continued: "I'm tired of it. Sobrenians thinking they can come here and do what they want. Buruden saving Avery. I told you back on that Buruden ship that I needed to finish the mission successfully. That's my way of fulfilling the responsibilities I'd taken then. I'm accepting a new set now."

"What're you going to do?"

"Work to get Humanity off of Splendor."

"You can't be serious."

"You'll see how serious I am." Tiernan stood. "Just fair warning, Ambassador. Good day." Tiernan began climbing down the craggy outcropping.

Chanda's first instinct was to run after Tiernan, to try to convince him he'd chosen the wrong course, not just for Splendor but for himself. But she made herself sit right where she was. Negotiations just weren't recommended sometimes.

How much of a danger was Tiernan? Chanda was willing to do nearly anything to protect this world. Would that include violence against other Humans?

Maybe *this* is actually my biggest mistake ever, Chanda thought. I'm doing exactly what an ambassador can't allow herself to do—identifying with my posting, not thinking enough of the Unity.

A lot of factors to balance. Valley dwellers who want to end the evacuation effort. Highlanders influenced by those valley dwellers. Sobrenians, and their potential for violence. Buruden, a third sentient species, and possibly a renegade Human. Maybe too many factors. I have to remember that truth. Splendor's truth.

Pinpoint had already dropped below the western horizon and darkness swept toward Chanda. In the dim light, she made her way down the steep, rocky slope, step by step.■

(EDITOR'S NOTE: This story is part of the same history as "A Glimpse of Splendor" [February 2000] and "Splendor's Laws" [June 2000])

Everything begins in mysticism and ends in politics.

—Charles Peguy

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FACT ARTICLE

A Question of Immortality

William Sims Bainbridge, Ph.D.

Can technology confer immortality? The answer depends at least partly on what you mean by the question!

Arthur C. Clarke's 1953 novel, *The City and the Stars*, concerns an eternal city inhabited by eternal people. In a thousand-year lifetime, they play adventure games in computer-generated virtual reality, create works of art, and enjoy social activities. Then they enter the Hall of Creation to be archived inside the Central Computer. After a few thousand years, they will be reconstituted again, to experience another life before once again entering the archive.

What science fiction imagines, science can realize. Just as Clarke's prophecy of the communications satellite was brought to reality in the 1960s, his idea of cybernetic immortality is nearly within our capability today. Before making the case for it, I will briefly survey the status of more biological approaches: cryonics (freezing), DNA preservation, and brain scanning. These methods have promise, but each may have in

A fundamental question in talking about immortality is what you actually consider your own personal identity to be. Are you your body? Or are you your unique attitudes, opinions and beliefs? Your memories? Your deeds, reputation, and legal status as a citizen, or the social roles you play? Are you a unique locus of transcendental consciousness, or an already immortal soul? Technological preservation can be more successful with some of these than with others, and you will have to decide which are most important to you personally.

Biological Approaches

The idea that freezing could protect humans against death has been used many times in science fiction. The 1931 story, "The Jameson Satellite," by Neil R. Jones, concerns a scientist who has himself preserved in the cold of outer space for forty million years. The 1938 movie serial, *Buck Rogers*, begins as the hero's

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Alaskan mountains. Buck floods the cabin with experimental "novano gas" which places him and his teenage sidekick into "suspended animation" until they are revived five hundred years later.

The April 2000 issue of *Analog* contained a nice article by Dr. H.G. Stratmann about the problems of cryonics. Freezing a human body would destroy delicate tissues as the ice crystals expanded like tiny daggers, and low temperature generates chemical toxins. In his 1956 novel, *The Door into Summer*, Robert Heinlein argued that a living body could be preserved indefinitely by cooling it to four degrees Celsius, near but not quite to the freezing point. Unfortunately, Dr. Stratmann's article points out that cooled even just to 12 degrees Celsius, the hemoglobin in human blood stops delivering oxygen to the cells.

Inspired by stories like "The Jameson Satellite," more than thirty years ago Robert C. W. Ettinger launched the cryonics movement to freeze actual human beings. Perhaps cryonics will eventually develop the equivalent of novano gas, but while we are waiting for that miracle, we had better explore other options.

A partial answer may be found in the preservation of small samples of DNA. The Center for Reproduction of Endangered Species at the San Diego Zoo has established a collection of cryopreserved animal cells, better known as the Frozen Zoo, "to preserve the legacy of life on Earth for future generations." The Coriell Institute for Medical Research has established a repository of cells from human beings with inherited diseases, and a sufficient sample is four teaspoons of blood.

Frozen DNA samples can be stored indefinitely without deterioration. Under favorable conditions, DNA inside bones can be preserved for very long periods without freezing. Indeed, analysis of ancient DNA has become a prime research technique in physical anthropology, and credible studies have reported success in analyzing DNA fragments from Neanderthal specimens tens of thousands of years old.

However, a clone made from your DNA would not be "you" any more than your identical twin would be if you had one, because it would lack your unique memories. A sample of your DNA could be only part of the preservation process, and there would have to be some way of recording the contents of your brain.

Computer entrepreneur Ray Kurzweil has publicized the idea that magnetic resonance imaging (MRI) could be used to read out the neural structure of a person's brain, which then could be simulated inside a computer. Unfortunately, the spatial resolution of MRI is currently far too poor to reveal how individual neurons connect to each other. A *voxel* (volume pixel) of one cubic millimeter is considered high resolution today, but it can contain as many as 100,000 neurons.

The resolution of MRI improves by increasing the magnetic field strength, which is typically 1 to 3 *tesla*. A tesla is 20,000 times the Earth's magnetic field. The US Food and Drug Administration currently requires special permission for field strengths above 4 tesla. MRI equipment also employs radio waves. Fluctuating magnetic fields and radio waves can cause *peripheral nerve stimulation*, in which the person's muscles start twitching and he or she experiences disturbing sensations. At very high strength, they would cook your brain like a microwave oven.

Laboratory methods are being developed to trace the actual connections among neurons, but this is not a simple business. The rootlike structures called *dendrites* that connect synapses to the neuron cell body can be extremely difficult to disentangle in slices of brain tissue, let alone in the living brain. Human neurons are not hard-wired, and it is quite uncertain how much one would need to know about the fine structure of synapses, glial cells, and neurotransmitter receptors to understand how any group of neurons really interact.

A better course may be to observe

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how electrical potentials or local metabolisms vary dynamically as a person thinks, perceives, and acts. Some experimenters are working with voltage-sensitive fluorescent dyes, and others are using diluted solutions of calcium indicators. These methods work only on relatively small exposed surfaces of the brain.

Thus, purely biological approaches to immortality may not be the whole answer. Barring the invention of Buck Rogers' novano gas, freezing is a dubious choice. DNA preservation and brain scanning are not ready to provide immortality, but both can make useful contributions to a multidimensional attack on the problem, especially in combination with psychological and behavioral measures.

Social-Psychological Approaches

Over the past century, psychologists and sociologists have created a bewildering array of questionnaire items to measure aspects of a person. The American Psychological Association has recently published a seven-volume series of books describing a vast number of such tests. Anybody can visit the website of the Inter-university Consortium for Political and Social Research and scan through the codebooks of hundreds of questionnaires, gathering useful items by the bushel.

However, many tests are "protected" by copyright, and publishers defend their sources of income. Psychologists try to keep the public from obtaining copies of certain tests because widespread familiarity with them might invalidate their use as diagnostic tools. Unfortunately, most tests have been created for a purpose almost opposite to the one we are interested in here.

To explain, I will use a classic example: the work of Richard Christie in creating the "Mach Scale." Christie belonged to a major tradition in social psychology that sought to discover distinct types of human personality. He noted that the sixteenth-century Italian political theorist, Niccolo Machiavelli, had come to represent guile and deceit in interpersonal relations, so he decided to cull Machiavelli's writings for potential questionnaire items that might reveal people who had a similar perspective.

Christie developed 71 candidate statements, then put them in a questionnaire filled out by 1,196 college students, asking how much they agreed or disagreed with each. The students' responses were scored, and they were divided into those scoring high on Machiavellianism, and those scoring low. Then Christie went through the 71 items to see which discriminated between high and low scorers. This reduced the list to 20 statements that all seemed to be tapping the same personality characteristic, the famous Machiavellianism or "Mach" scale. Half the items were written so that a Machiavellian would tend to agree with them, and the other half so that a Machiavellian would disagree.

One of my students, Lyn Jacobson Hoefer, created what is called a *short form* of the Mach Scale, reducing the number of items still further. She included the 20-item scale in a questionnaire she administered to 810 college students, and analyzed the results using a statistical technique called factor analysis. Her aim was to find the subset of items that correlated most strongly with each other, while being alert to the possibility that subgroups of items might measure slightly different aspects of Machiavellianism. The 10 items of her short-form Mach Scale are given here in Table 1.

Six items concern *tactics*, providing advice on how you should behave. The other four express *perspectives* about people and the world. The ten items can also be divided into two groups of five, one set that Machiavellians would tend to agree with (High Mach), and the other that they would disagree with (Low Mach). For many research purposes, one would combine responses to the ten items to get a single number, for example, counting how many of the High Mach items a person *agreed* with, plus

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Table 1: A Short Form Machiavellianism Scale

High Mach Tactics:
1. Never tell anyone the real reason you did something unless it is useful to do so.
2. It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.
3. It is wise to flatter important people.

Low Mach Tactics:
4. Honesty is the best policy in all cases.
5. There is no excuse for lying to someone else.
6. One should take action only when sure it is morally right.

High Mach Perspective:
7. Generally speaking, people won't work hard unless they're forced to do so.
8. The biggest difference between most criminals and other people is that criminals are stupid enough to get caught.

Low Mach Perspective:
9. Most people are basically good and kind.
10. Most people who get ahead in the world lead clean, moral lives.

the Low Mach items he or she *disagreed* with.

Notice that this process began with 71 candidate Machiavellian statements, and used statistical processes of elimination to arrive at just 10 items, and then combined responses to get a single mathematical score. The aim of much quantitative personality research is to discover a few very general dimensions of human variation at a very abstract level. That is the opposite of what you would want if you were trying to discover the multitude of characteristics that made a particular individual unique.

The Question Factory

Based on a decade of work on computerized survey research methodologies, in May 1997, I launched a website called The Question Factory. The aim was to enlist the help of thousands of people to mass produce new questionnaire items covering many of the major spheres of human thought and activity. People were invited to respond to online questionnaires asking them to express themselves by writing anything from a phrase to a paragraph on various topics. Their responses were then collated, combined, and edited to create new fixed-choice questionnaire items, and I then wrote eight new software modules to administer, archive, and analyze an individual's reactions to these new items.

Late in 1998, I helped develop a complex web-based questionnaire called *Survey2000*, on a team led by sociologist James Witte and sponsored by the National Geographic Society (see my article in the July/August 2000 issue of *Analog*). *Survey2000* included an item developed on The Question Factory about the future, and approximately 20,000 adults wrote ideas about how the world might be a century from now. This vast sea of verbiage was distilled down to 2,000 statements, 100 in each of 20 topic categories, and incorporated in a software database called *The Year 2100*. Ten of these items from five categories are listed in Table 2.

The Year 2100 is a time machine for the imagination that helps you develop your own personal picture of how the world might be a century from now. Like the other modules in the series, it consists of two main parts:

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Table 2: Sample Items in the "Year 2100" Module

Art:
A9. A few giant corporations will have control over all fields of entertainment.
A67. Classical art will make a comeback, to replace the tawdry, cheap, sensationalism of popular music and movies.

Government:
G27. Governments will lose both revenue and power, because it will be difficult to track, value, and tax the many private currencies that will exist in the digital economy.
G78. Democracy will be threatened by under-educated, chronically lazy citizens who demand benefits from their government but do not feel responsibility to defend it.

International:
I9. China will dictate policies to the rest of the world, feeling its huge population gives it the right to do so.
I63. The European union will have reclaimed for Europe its former intellectual, financial, and political dominance in world affairs.

Religion:
R12. A new major religion will rise to prominence, fed by the masses looking for something to combat the modern world.
R64. There will be a resurgence of the old Earth-based religions that worship a female deity.

Technology:
T33. Environmental protection agencies will mandate more and more expensive fixes for pollution, until the average citizen is unable to afford personal transportation.
T75. People will have communications devices implanted for a technological form of telepathy or ESP.

DATA INPUT: In a series of sessions at the computer, you evaluate the 2,000 ideas about what the future will hold for humanity. You judge how good each idea is, on a scale from 1 (bad) to 8 (good), and how likely it is to come true, from 1 (unlikely) to 8 (likely).

DATA ANALYSIS: Several options help you understand yourself better and compile your alternative views of the future. For one example, a statistical analysis measures your optimism or pessimism in 20 areas of life. For another example, your Utopia is a word processing file of the ideas you rated very good but very unlikely.

"Self-Esteem" is the second software module derived from The Question Factory. It is a tool for exploring the image you have of yourself. It provides a record of your values, habits, interactive style, and personality. You evaluate 1,600 personal qualities in terms of how good each quality is and how much you possess it.

The statistical data analysis measures your self-esteem in 20 areas of life. There is also qualitative output. For example, your Ideal is the qualities you rate very good but feel you lack. The Biography function creates a word processing file of your prime qualities, where you may prepare material for your autobiography by describing episodes in your life when

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Table 3: Sample Items in the "Beliefs" Module

Cloning:
C8. Humans were meant to reproduce sexually, so cloning is obscene.
C38. When a beloved child has a terminal disease, cloning can give the child's parents a second opportunity to raise him or her.

Death:
D19. At death we will meet our maker, review our lives, and ask forgiveness for our wrongdoings.
D72. The traditional view of Heaven—where one is forced to worship an arrogant and self-centered god—is really Hell.

Family:
F14. People who experiment with new forms of life, such as group marriages, should be admired for their courage.
F39. The traditional family is being destroyed by increased female employment, higher divorce, spreading non-marital fertility, and liberalized sexual codes.

Mars:
M38. When humans begin to live on the planet Mars, they should experiment with alternative social systems, creating a meta-utopia composed of varied societies.
M83. Martian culture should place a premium on personal accountability, responsibility, strong work ethic, and individual skills.

Outer Space:
O25. The Moon or the Sun could be used for safe disposal of toxic materials and nuclear waste.
O86. The space program provides a goal and a feeling of long-term purpose for humanity.

you exhibited each of them.

"Experience" is a software tool for exploring the actions and events that make up your life, providing a record of the things you do, the things that happen to you, and the experiences you fear or desire. You judge how good each of 2,000 personal experiences is, and how recently you have had it.

"Beliefs" is a software system for exploring your fundamental assumptions (what you consider true) and your ultimate values (what you consider important). The 2,000 items were collected from a large number of questionnaire respondents in surveys sponsored by The Question Factory. Ten sample items are listed in Table 3.

"Wisdom" derived its 2,000 items from the *Babylon 5* science fiction universe, all 120 hours of SF television plus about 30 books. In *Babylon 5* there are many examples of the idea that the human personality could be preserved. In the episode titled "The Deconstruction of Falling Stars," four characters are revived after five hundred years in the form of holograms, but with such complete memories and thought patterns that their ghosts are able to defeat the evil people who restored them to existence. Table 4 lists ten items.

"Taste" asks you to evaluate 2,000 foods in terms of how much you like each and believe that each is healthy. The output incidentally encourages you to try new foods and to improve your nutrition.

"Emotions" was created through sur-

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Table 4: Sample Items in the "Wisdom" Module, from *Babylon 5*

Advice:
A25. You should be both terrified and reassured to know that there are still wonders in the universe.
A47. You should explore the past to create a better future.

Enigmas:
E25. The avalanche has already started; it is too late for the pebbles to vote.
E35. There is a hole in your mind.

Goals:
G62. It is an honor to aid any true seekers in their quests.
G83. All of this will be for nothing, unless we go to the stars.

Order versus Chaos:
O33. Strength comes through order and discipline.
O41. One should become an instrument of chaos.

Strategies:
S51. If you do the right thing for the wrong reasons, the work becomes corrupted.
S77. If you're falling off a cliff, you might as well try to fly.

veys on The Question Factory asking people to write in what stimuli might cause them to have each of twenty emotions: love, fear, joy, sadness, gratitude, anger, pleasure, pain, pride, shame, desire, hate, satisfaction, frustration, surprise, boredom, lust, disgust, excitement, and indifference. You judge how good 2,000 stimuli are, and how much each would give you one of the 20 particular feelings.

"Association" traces some of the pathways in your neural network by presenting you with 2,000 pairs of words, asking how strongly you associate the words with each other and how important the concepts they describe are to you personally.

These eight modules offer fully 15,600 stimuli, with two responses for each; a total of 31,200 measurements. A person may repeat the modules annually, building up a dynamic record of personality changes and variability over time. Also in the testing phase are two different methods for archiving aspects of your mind. One measures parameters of your short-term memory (or "working memory") by asking you to briefly memorize 5,760 sequences of digits and letters of the alphabet. The other is an extension of the Association software word-association test. A person responds to each of 4,000 words with the first other word that comes to mind and then uses both words in a sentence. This process is videotaped, to provide images needed to create animated computer graphics of the person speaking any words or sentences.

Resurrection

It makes sense to work on means for recording human personalities before we have worked out all the details of resurrecting them, because many people may not survive until the entire technological system has been perfected. But much research is currently in progress on means for archiving and playing back aspects of a human being.

Several projects of the federally-funded Digital Library Initiative (DLI) are developing needed technology, incidentally to other work. Notable is the Informedia project by a team at

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Carnegie-Mellon University headed by Howard D. Wactlar. In its first stage, this multimedia DL developed automatic methods to index, search, and summarize audio-visual material, such as television news and science programs.

One application of such technology is the virtual interview. Suppose you are a student doing a report on President John F. Kennedy's policies. Either by speaking into a microphone or typing on a keyboard, you ask him a question. The DL's computer system searches its archives for everything he wrote or said that might be an answer to your question, and presents the material to you. Taken just a few steps forward, adding an "avatar" computer-animated image of a person, such a system would allow you to carry on a virtual conversation with someone who was deceased but had earlier contributed much verbal material to the DL.

A new phase of Informedia, sponsored by the Defense Advanced Projects Agency, is Experience on Demand. This "develops tools, techniques and systems allowing people to capture a record of their experiences unobtrusively, and share them in collaborative settings spanning both time and space . . . Personal EOD units record audio, video, Global Positioning System (GPS) spatial information, and other sensory data, which can be annotated by human participants." Two obvious military uses are battlefield reconnaissance in which the EOD unit worn by a scout records what he sees and hears, and training in which an expert goes through the actions and environment that a neophyte must learn about.

The most impressive project to record human experience is the privately funded Survivors of the Shoah Visual History Foundation. This magnificent and expensive effort was established by director Steven Spielberg in 1994 to videotape the reminiscences of survivors of the European Holocaust. At latest count, interviews had been completed in 32 languages with over 52,000 survivors of the concentration camps. It would take more than thirteen years to watch the entire collection straight through. Advanced DL techniques will make it possible to link all testimonies that concern the same topics, and to navigate from record to record in a myriad of enlightening ways.

The Shoah project is already confronting some of the ethical issues that future archives of human personalities will have to face. For example, it is necessary to protect the privacy and integrity of the interviews. Malicious people could misuse the pictures, voices and personal information in many hideous ways, if they could readily be downloaded from the Internet. Therefore, the current plan is to use secure fiber-optic computer networks to provide the material to protected sites, such as the United States Holocaust Memorial Museum.

Imagine that we record your personality and life's experience, using a variety of social-science and computer methods like those pioneered by The Question Factory, Experience on Demand, and Survivors of the Shoah Visual History Foundation. The few dozen terabytes of your data could be stored simultaneously in several high-security archives. But a working copy could be in custody of your great-grandchild or someone of the future who simply wants you for a virtual friend.

Even with today's primitive technology, your voice could speak again, advising your future friend about prosaic things like what to have for dinner, helping him or her through a rough time of life by sharing how you have experienced and dealt with disappointment, and suggesting ways that he or she might build a better future.

A politically radical but technically easy option would allow you to vote posthumously in elections of your nation, community, or organization. Today, you would answer several thousand questions about political issues, policies, and your general philosophy of life.

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Long after your demise, a random sample of the population would answer these same questions plus new questions that were part of a referendum on some key decisions of the day. Statistical analysis of the future respondents' answers would make it possible to predict how you would answer the new referendum questions, and your vote could be included with theirs.

Any innovation that overturns prevailing social norms will meet opposition, but often innovations can get started in especially conducive contexts, and spread out from there. For example, opponents might argue that only living people should vote, because the dead have no interest in how society is run. Taken to the extreme, this argument implies that old people, who will die before the full effect of new laws has been felt, should have only fractional votes, whereas young people with many years to live under the regime should have full votes. Posthumous voting, however, could get started in voluntary organizations, before gradually invading the society's political process.

For example, imagine that an elderly rich person named Bill Getty wanted to leave a billion dollars in a foundation for struggling artists. A scientifically designed art appreciation test would measure his tastes and aesthetic sensitivities. After his death, every year hundreds of artists would submit works of art that would be displayed to the public. Visitors to the exhibition would take the same art appreciation test that Bill Getty had, and they would rate each of the artists. A statistical technique such as multiple regression analysis would produce an equation, based both on Bill's test scores and those of the given year's exhibition visitors, that would estimate which artists Bill would have wanted to support, and they would win grants from his foundation. Because the money belonged to Bill in the first place, no one could complain about the fact that his tastes continued to determine the grants made by his foundation after his death. Once it was established in the special case of individual legacies, posthumous voting could gradually be adopted by university clubs, churches and other private organizations, before being tried out with political districts.

Today it is also technically possible to combine archived aspects of several people in a virtual-reality simulation of a community, although with nothing like the fidelity Arthur C. Clarke imagined the distant future could achieve. The Valley of the Shadow is a website commemorating two communities of the American Civil War, for example. In a few years, there may be online virtual historical communities analogous to Williamsburg, Virginia, and Mystic Seaport, Connecticut. Aspects of your personality could be put to work there, in the form of what computer scientists call an "intelligent agent," for the benefit of future students and tourists. The simulation could be kept running all the time, regardless of whether there were any living visitors, and your agent could debate with the others whether their lives were real or not.

Conclusion

Questionnaires and computerized databases may lack the drama associated with cryonics, cloning, and brain scanning. Answering questions in the comfort of your home is less exciting than plunging your severed head into a vat of liquid nitrogen, or feeding slices of your brain into a fax machine. But gentle technology may sometimes be most effective.

Already, it is possible to place a deceased person's record in a computer database that can participate in social life by advising living people and serving as a virtual friend. In time, it should be possible to incorporate a recorded personality in a robot—for example, a space probe or a cyborg astronaut helping to colonize the galaxy. Eventually, it may be possible to resurrect the personality in a cloned body that is identical to

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the original, whether on this world or on a distant planet that has been terraformed to make it livable.

To me, the most attractive feature of this approach is that we can begin to record ourselves today, without waiting for radical scientific breakthroughs, and that any of us can contribute to development of the technology. The most severe question is whether we would consider this to be real immortality, and many people would say that it was not.

From one perspective, even a perfect duplicate of you, capable of self-awareness and of impersonating you in public, is not really you. William F. Temple's 1951 novel, *Four-Sided Triangle*, concerns the duplication of a woman so that the two men who love her will each have a copy, leading of course to tragic results. If the woman had put her copy into cryonic suspension, we would still be reluctant to say she had found a way to preserve herself—her very own unique self.

We already possess technology that can allow aspects of your personality to influence the world in a dynamic manner, even after you are no longer living in it. This falls short of true immortality, because you (as conventionally defined) will not be conscious of it. Your evaluation of the possibilities for future cybernetic immortality will depend, therefore, not merely upon your estimate of the technical possibilities but also upon your personal conception of yourself. ■

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Look Away

Stephen L. Burns

It's easy to judge people and situations in terms of black and white, both literally and figuratively. Real ones are a lot more complicated.

I wasn't lost, but the longer I followed the directions given me by the Guide-Rite navigational system of the big Boditexx site-work truck I was driving, the more I got the feeling that I was being led into a time warp, alternate reality, or maybe a green and genteel Hell.

At first I made a point of counting the times I saw the Confederate flag proudly displayed on cars and given a place of honor on flagpoles. But when that number passed a hundred I gave up. In fact, after about the two hundredth Southern Cross, I started watching for COLORED ONLY signs. Up for nostalgic purposes only, of course. The Civil Rights movement of the 1950s and '60s had been over for around eighty years. I told myself that these people *must* know that. It was in all the papers.

Seeing plenty of faces as black as mine and seemingly at ease in this Rebel Hell did a little to help ease a sort of anxiety I really wasn't used to feeling. But not a lot. All the nonornamental gunracks I saw may have had something to do with it.

I'd always been of the opinion that the South was actually on another planet than the one where I lived, and I'd never really wanted to leave the city of Detroit on planet Earth to visit it. As head honcho of Boditexx's Morphology section, I shouldn't have been going out on an installation anyway. I had a well-trained crew for that. But company loyalty, especially to a struggling outfit like ours, can be a bad monkey to have on your back. Riding second ape was pure fiscal need.

The process which had condemned me to this trip below the Mason-Dixon line had begun when our CEO, Kurt Yeo, turned up in my section the week before. Visits weren't unusual. The fact that he came wearing a nervous, apologetic smile, and bearing two fresh Konas and a big plate of his wife's famous ginger cookies let me know it wasn't a so-

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cial call.

Wanting some privacy if I was going to be told I had to play hatchet-man, or was myself about to get the axe, I settled us into the brainstorming pit, a quiet, sunken-floored corner of my workroom with big cushy chairs and couches. The fabric was stain-resistant. Blood should wash off.

"OK, Kurt," I said once I had a coffee and a cookie. "Consider me softened up. What's the bad news?"

He took a deep breath, let it out. Tucked his long, glossy black hair behind his ears and off his thin face. Took another deep breath, then said in a rush, "We need you to go out on an installation, Jeff. Personally work with a special customer."

At least I wasn't fired. But as unwanted news, this came in a close second. "I'm not sure that's a good idea," I answered honestly, trying to say *no* without actually using that two-letter word. "You know how I am at customer relations."

Yeo grinned, relieved that I hadn't blown up. "Yeah, you suck at it. Believe me *dishi*, this isn't something I'd normally ask you to do." His smile faded, and he dropped his bombshell. "Here's the thing. We just got a tentative order for a hundred Model A bods."

I nearly spilled my coffee. "A *hundred?*"

A solemn nod. "You heard me right. I don't have to tell you what a sale like that would do for us. The biggest Model A order we've had so far were the twelve we sold to Limnax Studios. That was big. This is absolutely unbelievably *humongous*."

I took a sip of coffee and did the math. It was easy enough to do, even for an arty type like me. Our top-of-the-line Model A bods sold for around two hundred thousand bucks a pop. Selling a hundred of them would net our firm a cool twenty million dollars.

"That's great, Kurt. But what's it got to do with me going out?"

"I'm getting to that, *dishi*. It seems the buyer, a guy named Beauregard Bodeen, is a *big* fan of your work. Knew all the fancier jobs you've done, and mentioned your work for Limnax more than once."

"That did get us some good publicity," I admitted grudgingly. Against my better judgement, I'd given in and done a few interviews afterward—miserable bouts of moronic questions pitched by boobs incapable of comprehending the answers.

No good deed goes unpunished. One boob in particular had saddled me with the nickname *The Black Botticelli of Bods*, referring to the artistry which had transformed putty-colored production units into perfect high-functioning replicas of some of the studio's leading stars. These doubles were created to take over a hefty percentage of the stars' public appearances. This wasn't done to make the stars' lives easier, just longer; a wave of attempted celebrity snuffs had prompted this precaution. Ever greedy for publicity, they had turned around and made a big deal out of something that would have been far more effective if kept secret. *Hollywood*. Another planet best left unexplored.

"This guy has studied your work, Jeff. You're pretty well known as one of the best morphologists in the country."

"Don't remind me," I growled. "I never wanted fame. The envy of my peers and a regular paycheck is enough for me, thanks."

"That's kind of the issue here," Yeo said, slumping back in his chair and looking tired. "Boditexx has been hanging on by its fingernails for a while now. Making some money, but not a lot. There's too much competition from companies building cheaper—and cruder—bods for a lower price. The last quarter has been a complete woof. Our stockholders have been pretty loyal so far, but I've been hearing rumblings . . ."

"You're not the only one." Some of my staff were getting hinkish about the

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eroding value of their stock.

"We're on the edge of real trouble, my friend. There aren't enough other sales to keep our production lines running halfway efficiently, or enough dollars coming in to keep from resorting to layoffs much longer. We *need* this sale. To get it, I have to promise that you will personally handle the morphology. On-site, and in full cooperation with the buyer." He leaned forward, a plea in his eyes. "Sorry to lay all this on you, but a lot depends on what I tell this guy." A weak smile. "Not that I want you to feel any pressure or anything."

Sure, only twenty million bucks per square inch. I am and have always been a studio type. I not only hated dealing with the media, I wasn't a big fan of the public at large, either. Or clients. I despised travel, and abhorred being more than half an hour away from my wife, Alia, and daughter, Leesa. Sleeping in strange beds gave me insomnia and nightmares. Eating strange food put my gut and colon in a knot. I'm what they used to call a geek, no damn good at anything other than holing up somewhere and doing the one thing I am good at.

"Did I mention that there would of course be a decent completion bonus on this?" Kurt put in helpfully. "Say . . . five hundred per unit?"

I flinched. That hit me where I lived. The house needed a new roof. Leesa was just starting a very long relationship with a very expensive orthodontist. Alia's car was eleven years old, and seemed to spend as much time in the garage as on the road. That extra fifty thousand would come in real handy.

I gazed forlornly at the safe, familiar confines of my studio. I really didn't want to leave for the several days it would take to process a hundred bods.

But I also didn't want to leave it for some other outfit that might not treat me as well as Boditexx did. Or, for that matter, the unemployment line. The economy was in recession, after all. Again.

"OK, I'll do it," I mumbled in resignation.

Kurt jumped up, beaming happily. He grabbed my hand, pumped it. "Thanks, *dishi!* You might just be saving our company!"

"Just don't blame me if this doesn't work out," I warned sourly. "I'm the wrong sort of man for this kind of job."

"You'll do just fine." He sounded like he even believed it.

The bods were supposed to have been delivered to the job site that morning, and be waiting in a trailer body. A second trailer body would contain our on-site processing station; five big skin tanks, five imprinting chairs, control equipment and supplies for both. The truck I was driving carried my own personal workstation, a satlink for handling secure communications with the main office back in Detroit, and featured a small sleeper compartment for me to stay in while I was there.

Kurt had been kept pretty much in the dark as to what exactly this Bodeen wanted the bods for, and the size of the order kept him from pressing too hard. I knew my boss well enough to get the feeling that he may have had some sort of vague idea, but hadn't been able to shake that information loose. So I was heading into the sort of job I hated cold, a situation which I hated even more.

Once off controlled roads, the route the truck had me following wasn't taking me into the expected suburban or industrial area, but out into the country. I was born and raised in Detroit, and I've spent my entire life there. This hadn't really prepped me for such unurban surroundings. There were too many trees, and not nearly enough buildings. The cows worried me. Did they really expect those skinny wire fences to keep those big ugly beasts from straying out onto the road? I rounded every curve in a state of wincing trepidation, expecting to find what must have been over a

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thousand pounds of vengeful beef with a beef about my fondness for burgers in my lane, waiting to take out me and my truck in a slow-witted kamikaze attack.

The final leg of my odyssey had me turning onto Bodeen Lane, a meandering run of blacktop lined with giant trees and white board fences. Beyond the trees and fences were fields being worked by spidery agribotic equipment from John Deere and New Holland. The plants in the fields made me wonder how many pounds of dangerous pollen I was inhaling with each breath.

I rounded one final curve and my destination came into view.

One look and I almost turned around and headed back to Boditexx to clean out my desk. But thoughts of an end to leaks when it rained, straight white teeth for my daughter, and no more visits to Ernie's garage with my wife's car kept me driving up to and through the immense wrought-iron gate.

I'm sure there must be special terms for describing monster mansions on Southern plantations, but I don't know them. Such places no doubt also have special rules for visitors, known to everybody but me. Lacking any particular instructions to the contrary, I eased the truck around the wide, elegantly paved circular driveway, increasingly feeling like I was heading into a place and time where I didn't belong. I parked in front of an ornate marble-columned portico. Beyond it was a double front door that looked big enough to admit an elephant.

My unease grew as I went up to the door. I gave the door-knocker a critical look, noting that it seemed to be made of solid gold, and was in the shape of the inevitable Confederate flag. I thumped on the door with my fist instead.

Half a minute later, the massive oaken panels swung inward.

"Good aft'noon, suh. May I be he'pin' you?"

This question came from the thin, fortyish black man standing in the doorway. He was dressed in a red velvet waistcoat and matching breeches. Black silver-buckled shoes were on his feet, and white gloves covered his hands. I just stared, not quite able to believe my eyes. The guy was like something right out of a Civil War epic. One made with Klan financing.

"Suh?" he drawled again, a flicker of amusement lighting his eyes.

"Uh, I'm Jeffery Davis. From, um, Boditexx," I stammered.

The man bobbed his head. "Of course, suh. Colonel Bodeen has been 'spectin you."

Colonel Bodeen? "OK. Well. I made it. If you'll just tell him I'm here, I'll go check on our stuff. I saw the trailers when I came up the drive. Over, um, that way."

"Oh, no suh! The Colonel is 'spectin you pay a sociable call on him."

Before I could argue, he stepped aside and swept a gloved hand toward the interior of the house. "Please, suh, follow me. I'll take you to him directly."

After casting a longing glance back at the truck, I gave in and followed.

The inside of the mansion was as movie-settish as the outside, all huge airy rooms filled with antiques and reeking of money. After a hike more suitable to a trip through the mall than someone's home, and up the sort of staircase you could only call *grand*, I was finally ushered onto a second-floor porch sort of thing at the back. My porch at home had toys, bicycles, and a certain amount of junk on it. This one had white marble columns, white wicker furniture, brass and glass tables, and huge ornate cast-iron flowerpots bursting with blossoms.

Ensconced in one wicker chair was a gray-haired man in a white linen suit and black string tie. The suit fit badly, as if he'd shrunk inside it. His face was lined and worn, his skin loose and drooping. At first glance I thought he was really

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old, but as I got closer, it became obvious that he was probably only in his early sixties, and much of the way he appeared came from ill health.

He clasped a hardwood cane with both hands and struggled to his feet to greet me. "Mistuh Davis," he drawled in a raspy voice as thick as molasses. "It is a considerable pleasure to finally meet you, suh."

I gave being a company man my best shot. "You must be Mister, um, *Colonel* Bodeen," I said with a forced smile. "Glad to meet you, sir."

"The pleasure is entirely mine." He cautiously lowered himself back into his chair, jaw clenched and knuckles white on the head of his cane. "Please, suh, sit down. Samuels! This gennleman obviously needs a drink!"

I perched on the edge of a wicker chair, ready to take off at any second. "Really, I don't—"

He held up his hand. "Nonsense, young fellow. After a hard ride a man needs a little something to lay the dust. Fetch us private stock, Samuels. Ice on the side for Mistah Davis. Straightaway now, and none of your goddamn lollygaggin'."

Samuels bobbed his head and grinned. "Straightaway, suh. No lollygaggin' for me, no suh."

I watched the man shuffle off, clearly taking his own sweet time. What I'd just watched floored me. I'd have told my host to go fuck himself if he'd talked to me like that. How anyone could put up with such treatment was beyond my comprehension. I figured I was probably next. Maybe he'd want me to dance or something. If so, he was out of luck and I was out of a job.

I know my 'tude must have shown on my face, but Bodeen ignored it. "So, Mistah Davis," he said heartily. "Ah'm so glad you consented to work on this job for me."

"That's good," I mumbled in return, working hard to keep my fuse long and responses polite.

"Ah'm very much an admirer of your work. You, suh, are the greatest morphologist in this country."

I squirmed uncomfortably in my seat. Dealing with flattery has never been one of my A skills. I like hearing it, and I hate hearing it. I've always been more comfortable doing my work than talking about it or myself. Right then all I wanted to do was get the foreplay out of the way, find out what this clown wanted, get it done, and get the hell back to Detroit as fast as I could.

So I did my best to steer the conversation toward the nuts and bolts of the project. "Thanks. You're, um, too kind. I believe the Model A bods you ordered are already here?"

"Indeed they are. Ah've taken the liberty of having your things set up by the horse barn. If you need water or power, both are available from there. Ah do hope that's acceptable."

"That's fine. I'll park the truck I brought with me there too. I shouldn't need any extra power, but after a couple days, I may need more water for the sleeper compartment in the back of the truck."

Bodeen shook his head. "Suh, ah would be plain mortified to have a man of your stature sleeping in the back of some truck! You simply *must* stay here in the house! Ah've had the Green Room made up special for your visit."

No way in hell I was going to bunk down at Tara. I tried to be diplomatic. "Thanks for the offer, Mr. Bodeen. But when I'm working, I keep odd hours and need to stay right where the work is being done."

He spread his hands. "If you insist, suh."

"Thanks. Now if you can just tell me how you want your bods configured I can get right to work."

Instead of answering directly, the old man swept a thin hand to take in the vista beyond the porch. "Please look out there and tell me what you see, Mistah Davis."

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I obediently looked. "Fields?"

"Correct. Do you know what kind of fields?"

I shook my head. "Sorry. I'm a city b—ah, person."

"Those are cotton fields. Some of the finest cotton fields in all of Dixie. The varieties grown here are very old and pure, untouched by any hint of genetic modification. That makes the cotton quite valuable. Certain purists will have it and no other, using it to make cloth for purposes of historical recreation and preservation." He peered at me expectantly with faded green eyes.

I had no idea what he wanted, so I just said, "That's great."

"Using agribotic equipment allows the cotton to be grown without the use of pesticides, herbicides, and the like. That is common to most crops these days. Such equipment is very cost-effective, but while it allows for high yields of an excellent, untainted product, it lacks a certain . . . something."

I still had no idea what he was getting at, and less of one as to what sort of response he expected. Fortunately, I was spared from coming up with yet another meaningless comment by the return of Bodeen's servant, Samuels.

"Yoah drinks, gennlemen," he drawled, bringing a silver tray to where we sat. On it was a cut glass bottle half full of brown liquid, two glasses, and a silver ice bowl with matching tongs.

Bodeen sniffed, giving the man the evil eye. "About time. You are a leadfoot, Samuels. Do you know that?"

"Yassuh." He put the tray down clumsily, nearly spilling its contents.

"Just leave it!" Bodeen growled. "We want to drink the stuff, not wear it!"

"Yassuh." He straightened up. "Will that be all yoah needin' from me?"

"I believe so. More of you might drive me to violence." He flapped his hands. "Now be off with you!"

"Very good, suh." Samuels shambled off, then turned back and said, "Now don't you go forgettin you're s'posed to go easy on that stuff, suh." This warning delivered, he left the porch.

"I shall do as I damn well please," Bodeen grumbled as he filled two glasses, dropping a couple cubes of ice in mine. "This is my very own private stock Kentucky sippin' whiskey, Mistah Davis. Smooth as silk and strong as sin."

"Thanks." I took the glass, but didn't try it. I'm more of an imported beer sort of guy.

My host took a sip, grimaced, then bellowed, "*Samuels! You have watered my goddamn whiskey again, you no-account cur! I swear I shall have your hide for this!*"

Samuels stuck his head back through the doorway. "Yassuh, I 'spect you will." Then he disappeared again.

Bodeen let out a put-upon sigh. "Pardon my outburst. Now back to the matter at hand. My sales figures have shown a slight erosion of late. Come to find out, another grower is providing a similar—and inferior—product at a much lower price."

"Competition is tough in our business, too," I said, trying to keep playing company man, and just wanting my quality time with our new customer to be over. I didn't add that it was so tough I'd ended up railroaded into being sent out to work with some self-styled cornpone Confederate Colonel who seemed to think time had stopped at 1850, and *wouldn't tell me what the hell he wanted!*

"Ah'm sure it is. To stay ahead, one needs an edge. A vision. Look out into those fields, Mistah Davis. Tell me what is missing."

I looked, but didn't really see anything—or the lack thereof. "Sorry, Mr. Bodeen, I just morph bods. If you'll just tell me what you want, I can tell you if it's doable."

For some reason, he seemed reluctant to give me this information. He took a long slow sip of his drink, then said, "Forgive me, suh. You are a practical man with a great, unspecified task ahead

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of you. Ah am a sick old man who is set on seeing a certain dream come true."

I tried for a mollifying tone. "I'm better at dreams than visions, Colonel. Tell me what yours is, and I'll do my best to make it come true."

He peered at me through hooded eyes, then nodded. "Very well, Mistah Davis. This plantation is quite historically accurate. It is a place where the ways of a more genteel age still live on. My crop is one steeped in tradition, and comes from a place that maintains that tradition. This adds considerable cachet to my product. But there remains something missing. Something that would complete the picture." Again that expectant look.

I should have seen it coming. But I didn't.

"Which is . . ."

"*Slaves*, Mistah Davis." His face took on a fiercely determined look. "I want those bods turned into historically accurate slaves to tend and pick the crop."

The next thing I knew, I was draining that drink in a single gulp. Then choking on it, and what I'd just heard.

I didn't explode, at least not right then. I stammered something about having to check back with Kurt Yeo, and got the hell out of there, a big packet of info the Colonel pressed on me tucked under one arm.

I wasn't kidding about Kurt. Not fifteen minutes later, I was in the back of the truck I'd driven down, having myself a face-to-face with him. He sat behind his desk and safely out of reach, absorbing my tirade with the pinched look of a man suddenly thrust into a tight place. Me, I looked crazed, glaring into the pickup and nearly foaming at the mouth.

"*Slaves*, Kurt!" I repeated. "That crazy old fart wants *me* to build him historically accurate black slaves to pick his cotton and live in these shacks he built and sit around in the evening singing *Swing Low Sweet Fucking Chariot!*"

"Wow," Kurt said again. "That's pretty strange."

"*Strange?* It's an *insult!* It's disgusting and creepy and just plain ugly!" I drew a rattling breath. "My ancestors were probably slaves! You can't expect me to do shit like this!"

"OK," Kurt said, holding up his hands. "Cool down. Don't trip a safety."

"Cool *down?* Come on, man! How would you like it if what he wanted were chink coolies to pick rice for him? Wouldn't you be insulted? Wouldn't you be offended? Wouldn't you be utterly pissed off?"

"Yeah, I guess so." Yeo sighed and rubbed his forehead. "Sure it's in bad taste. But Jeff, they're just *bods*. Partly organic robots. We've done bods for agricultural purposes before. Just last month you did those two for that orchid grower. We've done ethnic bods lots of times. How about those five you did for that museum in Melbourne? They were black, and you didn't have a problem with it."

"They were for a historical recreation!"

"So are these, aren't they?"

"But this is *different!*"

"Maybe some," he agreed. "But not really all that much. This guy wants farm bods with black skin, that's all. What color they are really doesn't matter."

"But he's got costumes for them!" I shot back. "Shacks for them to live in." I thumped the thick packet Bodeen had given me. "You should see this stuff. He wants to turn back time and have black slaves working the fields so he can be their damn *Massa!*"

"OK, I concede that it's obscene," Kurt agreed in a placating tone. "The man's obviously a racist loon."

"Well, I'm glad you finally see—"

He held up a warning finger. "But."

"But *what?*"

"But he's paying us boomin' bucks for these hundred bods. *Twenty million dollars.* That's enough cash to really boost the odds that we'll still be in busi-

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ness two years from now. We don't want to end up like Robomagik, do we?"

This was a not so subtle reminder that I used to work for Robomagik, and ended up heading a department for him after my old company tanked.

I stared at him in disbelief. "Are you making threats?"

He shook his head. "No, Jeff, I'm not. I'm just reminding you of the facts. We've got one foot ankle deep in grease and the other on a banana peel right now. This sale will fix that. We all stand to make a nice chunk of change, and put Boditexx on solid ground. Everybody's stock will go up in value, including yours."

I shook my head, feeling myself getting backed into a corner. "But he wants me to make *slaves!*" I wailed.

"No, he wants you to make agricultural bods that *resemble* slaves. Why should the color of the bod's skin matter?"

"I just know it—"

He cut me off. "Jeff, I'll tell you what. I know you're upset. Finding out what this customer wants was a big shock. I don't blame you for going whappa. But don't overreact, OK *dishi*? Take a couple hours to think it over. Drink a couple beers. How close have you looked at the packet Bodeen gave you?"

"Not very."

"Like I said, have a beer and cool off. Look the stuff over. What he wants might be a bit our of our normal orbit, but you're *Jeffery Davis*, right? Some other company might give him ugly, tasteless caricatures, but we can do better. You can give them dignity, making them so real that maybe later on he'll want them changed to something a little less, ah, questionable. Will you do that for me? Take some time and think about this before you make up your mind?"

I glared at Kurt's image, grinding my teeth. He was a good man, levelheaded and ethical. I trusted and admired him, and I liked working for him. He paid me as well as could be expected, and gave me a free hand with my work. I did understand the position he was in. Boditexx was his baby, and he didn't want to see it die. Neither did I.

I thought about what Bodeen wanted. Shuddered.

Thought about Leesa's crooked teeth, and Alia's junk car, and our leaky roof. My gut twisted with anger and frustration.

"I'll call back this evening with my answer," I said tightly, then waggled a warning finger right back at him. "*No promises.*"

His relief was obvious. "Thanks, Jeff! You're a prince. We're all counting on you. Do this and maybe I can even bump up that per-unit bonus a bit."

"If I do this, you're gonna have to," I growled in reply.

Kurt was a details sort of guy, and had gone out of his way to make my unwanted on-site stay as comfortable as possible. When I investigated the small fridge in the sleeper compartment, I found it mostly filled with a good supply of my favorite beer. I grabbed a bottle, then headed outside to walk off my anger and consider my options.

Much as I hated to admit it, Kurt's arguments were valid. Bods *are* things: organomechanical cyberic robots. What they look like does not change their essential nature as service devices. I once did a pure custom job with four arms, three eyes, and green skin for a movie company. The bod didn't feel like a freak or an alien. It was a bod, its persona the one written for it. It had avoidance routines, but no fears. Its pleasures were positive feedback loops engaged by fulfilling its functions, and by praise from its owners.

Cleverly cooked-up personification made it seem self-aware, but that was just an illusion. Spend an hour with a well-made bod—one of mine, where I've had my top personifier Kendra working with me—and you would be

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unlikely to suspect that it wasn't human: But after a while longer you'd notice a certain flatness to its personality. While it had excellent reactivity, it was imbued with only a limited and uninspired initiative.

Bods were not human, just really good fakes. Although they could uncannily mimic real beings, their innate sense of self-awareness was only a little better than that of a clam.

My feet had started me heading toward the line of shacks nearby. They were to be homes for the slaves I was supposed to create. The shacks looked old and weather-worn and lived-in, although according to Bodeen they'd been built only a couple of months before. More really good fakes.

I considered myself a man of principle. I worked the high, arty end of the industry. I didn't make sexbods or masobods or snuffbods, leaving the creation of bods for questionable uses to others with lower standards and a money-based sense of ethics.

But when my thoughts returned to how much I wanted to still be working at Boditexx for the foreseeable future, and how useful the extra money would be, I had to wonder if maybe I was the right man for this job after all.

And not quite the man I thought I was.

"Mind if I join you?"

I was sitting on a split log bench on the back porch of one of the shacks, glumly gazing out over the cotton fields. The voice that interrupted my reverie was a clear crisp tenor with an unmistakable Boston accent.

I turned to look. A guy in jeans and sneakers, Edgar Allen Poe tee-shirt, and comfortably ratty suede vest stood on the packed ground, a friendly smile on his face. He looked familiar, but it took me several seconds to figure out who he was.

"Samuels?" I said uncertainly.

"That's me." He stepped up on the porch and offered his hand. "Anton Samuels."

He already knew my name, and the past howeverlong spent wallowing in a morass of conflicting needs and principles had left me sour and snappish. I glared at him, ignoring his outstretched hand. "Where's your monkey suit, *dishi?*"

He laughed. "Down in my room." He settled into the clunky old rocking chair next to my bench, propped his feet on the railing and sighed with contentment. "Beautiful place, isn't it?"

"I guess." The scenery was picture perfect. Or according to the Colonel, *almost* perfect. If Samuels and I had put on some rags and gone out into the fields and started hoeing or something, *then* it would have been just right.

Samuels gave me a sideways glance. "You're really having a hard time dealing with what the Colonel wants, aren't you?"

I stared at him. "It doesn't bother you?"

He shook his head. "Not really. Of course it helps that I understand the Colonel and his situation."

"His *situation?* Some rich old white guy wants to recreate the terrible things done to our people, to bring back goddamn *slavery*, and you're OK with that?" I shook my head. "Then there's the way he treats you and that stupid act you put on for him. Why do you stand for it?" I shook my head in disgust. "This whole place is like some sick joke!"

"The situation is rather complicated, Mr. Davis, and not quite what it seems." He reached inside his vest pocket, pulled something out. "Here, I want you to take a look at this."

He handed me a picture. An old-fashioned flat print. I peered down at it, trying to make sense of what I was seeing.

A somewhat younger and much healthier-looking Colonel Bodeen was posed in front of a giant Christmas tree. He was all ranked up in a full dress Confederate Army uniform complete with

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sword, and cut a proud and dashing figure. Hanging onto his arm was a tall, elegant black woman with ornately styled hair threaded with silver. She was costumed as Southern belle, hoop skirt and all. Her dark eyes seemed to leap up off the page and meet mine, crackling with intelligence and humor. Both were smiling at the camera, but somehow smiling at each other, like they shared some really splendid joke.

"Who is she?" I asked, still studying the picture.

"That's Miss Caroline, Mr. Davis. The Colonel's late wife."

"Jeff," I said automatically, captivated by the glow of their faces. They made the tree with all its tinsel and lights look dull. Like my mother used to say, *Some couples got juice.* They had it by the terawatt. "She's really beautiful."

"Miss Caroline was one of the greatest ladies I ever met," Samuels said, an unmistakable note of pain in his voice. "Beau—I mean the Colonel—wasn't really much into all this Southern Revival stuff before she came along, and never really got the fever. He went along with it to make her happy."

He swept his arm to take in our surroundings. "Most of this is her work. She oversaw restoring this place to the shape you see now. She put the fields back into production, and had the idea of planting historic strains of cotton. That woman was the Sun and Moon and stars to him. If she'd asked him to burn this place to the ground and dance on the ashes, he would've had his matches out in a heartbeat."

I didn't want to ask, but had to. "What happened to her?"

His shoulders fell and a wave of sorrow crossed his face. "She was killed about four years ago."

"How?"

"She'd gone to New York by herself on business. A gang of klongos grabbed her and the driver of the cab she was in. They got . . . used, then slaughtered, then . . . well, you know what they do. The cops got them before all the evidence was gone."

"Monster in a pipe," I muttered darkly. Detroit had its share of klongos. The drug made classic brain-destroying, sociopath-creating drugs such as crack and PCP look like mother's milk in comparison. Habitual users turned savage and feral, many developing a taste for human flesh. Raw.

"You get the picture. It was bad, and he was never the same after that. But he's kept things going because they were things she started."

I still didn't get it. "OK, I can see that. But this thing he wants me to do. She couldn't have wanted slaves working those fields."

Samuels surprised me by throwing back his head and laughing. "Are you kidding? That was *her* idea." He laughed again, but now it sounded sad and rueful. "You have to understand that Miss Caroline was, well, *wicked*. No other word for it. She did the renovations and such right, but it was all this big elaborate joke to her, out-Southerning the folks who made a big deal about such stuff. She and Beau played it like a game. They used to throw these huge fancy dress balls, invite all the old family gentry. There they'd be in this perfectly restored place, him white and old family, her black as coal and playing Mistress of the Plantation to the hilt. It was like some monster piece of performance art, a running prank they played on the whole rest of the world."

Samuels caught my gaze, held it. "This job he's hiring you to do is one of the few things here he wouldn't let her have her way on. She wanted to hire people to play slave and do the work. He was really uncomfortable with the idea. Felt it was demeaning, and taking the joke too far."

This was making less and less sense all the time. "I thought you said he wouldn't refuse her anything."

"He didn't. He *finessed* her by pointing out that the only socially and ethical-

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ly acceptable way to do it was to hire actors, and chances were they'd just screw up the crops."

"Good odds there." I'd spent time with actors.

Anton Samuels stood up, clearly feeling his message had been delivered. "Hope knowing all this helps."

I handed the picture back and asked the obvious question. "So why does he want to do this now? I mean his wife's dead, right? His story about reclaiming a market share doesn't really hang straight, and these bods are costing him over twenty million dollars. He can't make that back, can he?"

"No way in hell. He's still uncomfortable with the idea of having slaves in the fields. Real uncomfortable."

My frustration boiled over. *"Then why the hell is he doing it?"*

"He's not all that long for this world. He started going downhill when he lost Miss Caroline, and isn't of a mind to delay the day when he gets to see her again. But this is something *she* wanted, and he sees you and your bods as his one and only chance to give her the one thing he held back from her when she was alive."

All of this new information only served to further mess up my mind, and make my decision even more difficult.

"So you think I should do this," I said.

"Yeah, I do. I mean I do have some reservations about it, but he's become totally obsessed with making this happen, and failing at it might just break his heart."

I stared at him. "So what's your story? How do you fit into this mess?"

He flashed me a brilliant smile. "Some other time, maybe. You've got enough to think about for the time being."

I watched him saunter away. Before he had gone too far he began to whistle. I recognized the tune, and the words came into my head unbidden.

I wish I was in the land of cotton—I was, and knew I didn't belong there.

* * *

"OK, Kurt. I'll do it."

My boss let out the breath he'd been holding. "That's great, Jeff! Really great! You won't be sorry."

"I already am, and chances are by morning I'll be even sorrier. Because next I'm going to call Alia and Leesa, then I'm going to take a shot at drinking every one of those beers you sent along."

"Go for it! I'll arrange to have a couple cases more delivered tomorrow. You want more than that, just let me know."

"It may come to that. And if the beer doesn't work, I might just need you to find me a local doctor who does lobotomies."

The next morning I was one hurting unit. My head throbbed. My eyeballs ached. My self-respect felt as beaten up and run over as a slab of cube steak lying in the fast lane. It was in this debilitated and delicate condition that I began the unwanted task of giving Colonel Bodeen what he wanted—and didn't want.

In the packet of stuff I'd been given were three 50TB oppies, two labeled PHOTOGRAPHS. I started going through one while trying to suck down enough coffee to make survival bearable, throwing the images up on the two-meter VistaView on the inside wall of the truck beyond my workstation.

My work almost always involves the creation or recreation of a specific individual. The bods we did for Limnax had to be dead ringers for the actors and actresses they were to sub for; physically identical down to the last detail. Other bods were generally morphed to match criteria laid out by the customer.

Here I was expected to do something slightly different. I was supposed to recreate a representative sample of a certain segment of a bygone population. A hundred separate individuals, each with a face and body true to their time and situation.

Had Bodeen not provided me with photographic materials, I would have

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found my own. So much had been given to me, I suspected that he'd somehow tracked down every digitized photo from that period in existence. Some were marked for my attention.

The faces in those old pictures pushed buttons in my head that I hadn't suspected were even there. I had no problem reading them across the gulf of time separating us. It was like they were written in a language encoded in my blood and bone, or hardwired into racial memory.

Each face told a story. Even those that wore smiles had a certain something in their eyes. It varied from face to face. In some it was unbroken pride, in others it was defeat. Resignation. Fury. Appeal. The souls behind those faces reached out and tried to whisper their terrible stories in my ear, and they succeeded.

Finally I managed to pull back a bit, to make myself concentrate just as much on body type, posture, general physical appearance. That was where the morphing process would begin.

Most of them were thin and sinewy. Only a few, women mostly, carried any spare flesh. Matching them wouldn't be difficult.

Our Model A bods stand five feet, eight inches tall, and weigh in at precisely 145 pounds with their versaderm coverings, before the application of their final cosmetic skin. That material, our own special formula of synthetic skin bonded to a nanoaugmented substrate, would add another six pounds.

That was their base size. Changing the thickness, length, and radius of their hollow coralite bones allowed me to make the bods shorter or taller, with limbs and frame to match. Working with the density of the thick versaderm layer let me make them thin or balloon up to mimic larger body sizes.

So Model As could stand anywhere between four and seven feet tall, and be made to look like they weighed anywhere between seventy and three hundred pounds. Their weight remained the same, of course, though if an actual gain in mass was required, the pneumuoles in the versaderm could be filled with a saline solution instead of air.

More coffee helped banish the worst of my hangover. Feeling a bit less subhuman, I began the process of designing the various people I was going to create, working from the photos the Colonel had given me. I found myself drawn to certain individuals in those sepia images and to bringing them back to life. Or at least coding the morphstats I'd use to create near-perfect replicas. Quite often the ones I chose were the ones he'd marked.

By midafternoon, I'd coded roughly half the hundred physiognomic command sets I'd need, along with names and basic personas to match. I was due for a break. So after time enough to wolf down a sandwich, I took my workpad outside to begin the first stage of processing the bods.

They were still locked in the trailer that had carried them down from Detroit. I unlocked it and swung open the doors. The bods sat inside on long benches bolted to the trailer bed, fifty to a side. A hundred blank, incurious faces turned my way.

Unprocessed bods aren't much to look at. We build ours in that putty-gray color still used for some office equipment. They're sexless, all but faceless, and don't even have human muscle definition, their limbs tubular and smooth.

"Bods one through fifty, please come out here and line up," I called. On a job where more than a couple of bods have to be processed, they're each assigned a number before shipping to help in differentiating them. That number was on stickers plastered to their foreheads, midriffs and backs. At my command, fifty of them stood up and placidly walked toward me, unspeaking, and their bare gray feet nearly soundless.

A factory-fresh bod hasn't got much upstairs—so to speak; since at least half of their processing equipment is in their

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torso. What they do have are basic routines for environmental recognition, understanding speech and following orders, and self-protection imprinting that would, for instance, make them leave the trailer of their own volition if it caught on fire. The basics. They stepped down out of the trailer, filed past me, then arranged themselves in a straight line in numerical order.

"Number one, please step forward." Not everybody in my trade says please, but I always do. My task was to humanize them, and treating them as something other than machines right from the start was, to my mind, a necessary first step in that process.

The first bod in line walked up to me, stopped. Although it wouldn't be getting a persona imprint for a couple of days yet, I was also in the habit of referring to them by the name they would be getting right from the start.

"Your name is Adam," I informed it. "What is your name?"

"Adam," it replied in a sexless, inflectionless voice.

"Very good, Adam. Now please give me your umbilicus."

The bod tugged on a certain section of versaderm at its midriff, which extended, thinning and wrapping around the ropy organoform cable through which the physiognomic coding would be transferred. It offered the cable to me daintily, one pinky extended.

"Thanks, Adam." I plugged the cable into my workpad, called up the coding set designated 'Adam' and started the download.

Adam rocked on his heels when the load hit. Not because it hurt, but because for a fraction of a second there was a lack of control as the coding unlocked his physiognomic promware. Then he steadied, and began to change.

Adam was going to be tall, and on the lean, rangy side. Instructions sent to his coralite bones started them lengthening and reshaping. It took a couple of minutes for him to reach his full height, his arms lengthening in proportion to his legs and torso. Along the way, musculature resolved, and joints gained definition. Adam had big knuckly hands, reflecting long years of hard labor. Yet his wrists were thin, and his fingers could easily have been those of a pianist. The man in the photo I'd used as a model had been missing the ring finger of his left hand. Adam's ring finger on that hand reabsorbed into his palm. Since there hadn't been anything in the specs Colonel Bodeen had given me about the bods being fully sexed, Adam's groin remained smooth.

While his body had been changing, his face had altered as well, taking on the planes and hollows which, after it had skin, would give him a face uniquely his own. A face from the past.

The entire process took about four minutes. When it ended I checked him over carefully, then nodded in satisfaction. "Very good, Adam." I returned his umbilicus. "Walk around for a couple minutes, then go over and sit on the ground next to the trailer where you came from."

"Thank you." He stumbled away, his first movements awkward because of the new body shape. The short walk would help him settle into it.

"Number two, step forward please."

I had officially begun building slaves.

Just as I was about to start number eleven, I saw that I was about to have company.

Colonel Bodeen was heading in my direction. He moved with the slow caution of the infirm, leaning heavily on his cane. He appeared to be in considerable pain, his face a pale, knotted mask of concentration. I handed my workpad to the bod, then ducked inside the back of the control truck to borrow a chair from my workstation. I came back out with it just as Bodeen reached the bod I'd been working on.

"Here," I said, putting the chair down and patting the seat. "You look like you

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need to get off your feet."

"Thank you . . . suh," he replied in a hoarse, strained voice. "Most . . . appreciated." He lowered himself carefully into the chair, a grim smile on his face. "You are a very thoughtful . . . young man."

Thoughtful and blunt. "Are you all right, Mr. Bodeen? You look like death warmed over."

"Warm is what counts, son," he answered with a chuckle. Now that he was off his feet, his color was improving, and some of the clenched look left his face. "Nobody lets me walk on my own, but ah gave 'em the slip this time. Ah may be a goddamned mess, but ah can still get around on my own steam if ah'm a mind to."

I blinked. The voice and accent were all wrong, but the comment and attitude were straight from my ninety-year-old Aunt Olive, the Holy Terror of Holy Family Nursing Home.

"I'm sure you can, sir," I said lamely. It's best to agree with Aunt Olive, too.

He pointed his cane at the bod I was about to start working on. "Ah must confess that ah've been watching you through my window. Seeing these fellows change shape is a most amazing thing. The transformation is at times so extreme. Ah do hope it doesn't cause them any discomfort."

I retrieved my workpad from the bod who was about to become Delia. "No, the coding for changing body shape is input at a much lower level than that for touch and pain avoidance. Besides, part of the download process is to temporarily switch those centers off anyway."

He pulled a handkerchief out of the pocket of his white linen suit. "Good. Is it real pain they're feeling when they feel pain? If you get my meaning."

"No, sir. It's just negative feedback that kicks off avoidance routines."

He blotted his sweaty face. "Ah'm glad to hear that. Ah'm in the way of thinking that there are already enough of God's creatures who have no choice but to feel pain. Making more of them would seem to me a most terrible cruelty and injustice."

I couldn't help but stare. He'd just reiterated one of my deepest convictions. It *was* feasible to make a bod feel something very close to real pain, and there was a fringe faction in bod design that insisted we should go that way, arguing that this might help goad them to the next stage of development. Most everybody else in our trade, myself included, felt that would be going too far. Straight into obscenity.

"I think you're right, Colonel." Uneasy with our conversation, I addressed the bod. "Your name is Delia. Please hand me your umbilicus, Delia."

The bod complied. I plugged her in and started downloading her coding. Delia was going to be large, built like one round-faced and sassy-eyed woman who had seemed to leap from her photograph. Her body grew an inch taller, and her bone structure expanded to give her the heavy frame of the original. The versaderm began to puff and swell, most notably in the chest area. The female bods would have breasts so they would look right and fill their costumes properly, but otherwise would remain as sexless as the males.

Colonel Bodeen watched the transformation with evident interest, glancing my way a moment. "This is a most remarkable art you practice, Mistah Davis."

"Call me Jeff." I still wasn't happy about what I was creating for the man, but Anton Samuels' story showed me that Bodeen wasn't some racist asshole or monster. As had his comments about not wanting the bods to feel pain. Having heard his story and seen him walk, I knew that he was well acquainted with pain from the inside.

"Thank you, Jeff. You are most kind. Ah would be honored if you would call me Beau."

"I'm not sure I can do that, Colonel. It's just, uh, my mother taught me how

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to address my elders. After a few mouthfuls of soap and some lumps on the head, I learned it real good." Which was true, but there was more to it than that. I found myself liking the man, but really didn't want to be his friend. I just wanted to complete the horrible task he'd set for me and be gone.

The old man chuckled. "Learnin' taken at your mother's knee can be the hardest to overcome. Use whatever name you're most comfortable with, ah'm sure you'll find me answering to it. And now ah should leave you to your work, before that name becomes Pain In The Ass." He braced himself with his cane and began struggling to his feet. I started toward him to help, but he stopped me with a look.

"How long before you start . . . putting the final flesh on . . . these creatures?" he asked when he was standing, breathless from the effort.

"Possibly late tonight, but more likely sometime tomorrow morning." Movement caught my eye, and I saw Samuels heading toward us, probably to help the Colonel back to the house. Not wanting to see the poor old guy fall and break a hip or something, I stalled for time.

"Each bod will spend about twenty minutes in a skin tank. I have five tanks with me, but the process doesn't really run like an assembly line, so it's going to take quite a bit of time to process them all. I mean I could run it that way, but I like to keep an eye on each unit. Sometimes a bit of tweaking gets a better result."

"They say you are a perfectionist. Is that true?"

"I guess it is."

He nodded, then looked me straight in the eye. "Good. This is a difficult project for all involved. That's why ah chose your company. That's why ah wanted *you*. Only perfection will do." There was clearly some subtext to this statement, but I couldn't quite decipher it.

"Well, you've got the one and only *Black Botticelli of Bods* on the job, Colonel," I said, trying to sound positive but not quite getting there.

"So ah do. Let me leave you to your art." He turned to go, coming face to face with Anton. He scowled and thumped his cane on the ground. "What the devil are *you* doing out here?"

"Ah've come to walk you back to the house, suh," Samuels answered quietly.

Bodeen stuck out his jaw. "Are you treating me like some weak and helpless old man?"

Samuels ducked his head. "Never, suh. You knows that."

"Hmph. Well, as long as you're here you might as well walk back with me. Try to keep up."

"Yes, suh. I'll surely try, suh."

The Colonel glanced back at me. "Carry on with the good work."

"I will."

He turned and started tottering toward the house. Before he'd gone a dozen steps he started leaning on Samuels' arm. Before they'd gone a dozen more, I heard Bodeen whisper hoarsely, *"Thanks, Anton. It was goddamned stupid of me to walk out here by myself."*

"I think you did yourself proud, Beau," Samuels whispered back. *"Want me to carry you?"*

"No more than you already—"

After that they were out of earshot. I watched the two men slowly make their way back to the mansion, Bodeen leaning heavily on Anton's arm and laughing at something he said. They looked like the oldest and dearest of friends. They almost looked like father and son.

Nothing was what it seemed; not the Colonel, not Samuels, not their relationship, not this job. I'd gotten tangled up in some crazy-ass Southern Gothic web of multiple personalities and unfulfilled dreams and offerings to the dead. I'd reached the point where I wanted to give the Colonel what he wanted, even though he really didn't want it, and I didn't want to do it.

I was in over my head. I'm the first

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one to admit that people are just too damned complicated for me. That's why I'm better off in a studio dealing with bods.

I turned back to my work. "Thank you, Delia. You can go take a walk like the others did, then sit down with them."

Her thanks were as hollow as my conviction that I was doing the right thing when I started on the next one in line.

I'd finished downloading physiognomic coding to the first forty-eight bods around seven, eaten another sandwich, then gone back to designing the rest of the hundred. Around ten, I decided it was time for two things: a beer, and a call to Kendra Soliskova.

Kendra is Boditexx's chief personifier, and she always works nights. Quirky and intense, she has the magic touch at breathing life and personality into the bods we build.

She'd dyed her hair a luminescent purple since I'd seen her last, all of four days before. The Oculites which replaced eyes damaged in a childhood accident had been tinted the same color. A translucent tank top in the same shade completed her ensemble. For her, this was sedate.

"Kurt gave me the basics," she said in answer to my question about how up to speed she was on the project. "You want advanced agricultural programming, with an overlay as a servant. Nineteenth-century living skills for the off hours. Is that right?"

"Yeah, but it's a bit more complicated than that."

She laughed and toasted me with her soda. "Honey, ain't it always?"

"I'll drink to that." I took a sip of my beer. "OK, here's the deal. These bods are to play the role of slaves on a Southern plantation just before the Civil War."

"Wow. We haven't got prebuilt templates for *that* one. Kurt said we're doing a hundred bods. How much individuation are you looking for?"

"You had to ask me that, didn't you?" I hadn't really worked that part out yet. To what degree would the bods be generic slaves, and how much individual personality—and history, and attendant needs and wants and aversions and drives would they get? How fully realized as individuals would they be?

Her purple eyebrows went up. "You haven't nailed that down yet? How unlike you, boss!"

"This job is giving me problems," I admitted. "Big problems."

"Kurt kind of gave me that idea. The man wants black slaves. You, my genius leader of African ancestry, may not be the right man to give them to him. Conflict of interest and all that."

I settled back in my chair and rubbed my tired eyes. "You must've heard the rest. I really don't have much choice."

"Neither did the people you're supposed to recreate," she pointed out quietly.

I nodded wearily. "No, they didn't. I've been having the histories of some read to me in the background while I work. A good number of them were utterly dependent on their owners because they weren't educated or equipped for any other life. Some were deeply bonded to the people they served, and literally died serving and protecting them. Some died defying the rules set for them, or striking back at their owners. Most took what was handed to them because they knew it could be worse elsewhere, and their lives didn't help them imagine better. Some were treated quite well, but in the end they were still possessions."

"Lotsa people still living in that situation, Jeff. More of them women than men."

"Some things never change, I guess."

"Don't seem so. OK, boss, tell me what we're shooting for here. I can't hit your target unless I know what it is."

"Moderately solid individuation, I guess. Same level of self-identification and situational response, low initiative.

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But I don't want them working like machines. I want them to occasionally stop and stretch, work out kinks, watch a bird fly by, drink some water. Environmental responses of an outdoor worker. Good attention to detail in their duties, but a measured approach to work. Voices, speech patterns and vocabulary sets can be derived from the library. Hand that part off to Ron Davies."

Kendra absorbed all this, nodded. "So we're shooting for pretty real here, not just cotton-pickin' drivethrubots."

"That's what The Man keeps telling me. He wants them perfect."

"How up close and personal is he going to get with them?"

I recalled his painful progress out to see me. "Probably not very, but I want them to respond to him and all others appropriately, in character."

Kendra stared into the distance a few moments, then refocused on me. "I think I got a handle on the basic blocks to use. Howzabout I make up fifteen or twenty profiles, and spin variations on those?"

"That should work."

"I already got the stuff you sent. Anything special I should concentrate on?"

"Yeah, the faces. Study those faces, Kendra. They'll tell you a lot of what you need to know. Match them with the capsule histories I did for each one, and personification should come fairly easy."

"You just say that 'cause I'm the one doing the work. When do you need the overlays for imprinting?"

"As soon as possible, of course. Start whipping them together now, and I'll call tomorrow night to see where we stand. That work for you?"

"Sure. I guess I better get my fanny in gear."

She signed off. I sat there a few minutes, sipping my beer and mulling over what my next step should be. I was beat. The smartest thing I could have done was to go to bed.

Instead, I drained my beer, went in the back to grab a fresh one, then stepped outside. The sky had clouded over, and a light drizzle had begun falling. Only a few lights were on in the big house. Looking around, I saw the body-morphed bods I'd done earlier silhouetted against the light from the trailer, and realized I'd left them sitting out in the rain.

That wouldn't hurt them. Hell, even acid rain wouldn't damage that tough, self-repairing versaderm. Still, it made me feel like a damn hypocrite. Here I was getting all indignant over turning the bods into slaves, and then turning around and treating them like equipment.

I walked over to where I'd left them, the rain warm and oddly refreshing. "OK," I said, "All of you sitting on the ground better get up and go back into the trailer."

The ghostly gray forms rose as one, male and female shapes climbing obediently to their feet. They began filing back into the trailer.

A sudden impulse made me say, "Adam, you stay here." One form, taller than most of the rest, halted. The others walked around him. "Adam, follow me please."

He fell into step behind me as I led him into the other trailer. There I had him climb into one of the skin tanks. Then I called up the specs I'd written for him and started him processing.

Inside the saline-filled tank, flakes of programmed synthetic skin whirled out of the nozzles like black snow that slowly settled onto his form and covered it. I moodily sipped my beer and watched, interrupting the process only long enough for one small tweak that implemented a design feature I'd dithered about including. If I was going to do this, I would do it right.

The snowflake-sized skin fragments melded with their neighbors, and the nanoimpregnated substrate they were bonded to attached itself to the versaderm. His new flesh rippled as it settled into the programmed form that would

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give him his next level of human features.

Once he was fully fleshed over, the tank's cover opaqued. Multiple laser beams swept over his form, first triggering the final paramelaninotropic changes that would give him white and brown eyes, and color differentiation on the lips, palms, soles of his feet, and other places. This same stimulation caused the synthetic skin over his eyes and on his head and face to sprout keratinous strands that were a perfect visual match for hair. The beams shifted frequency once those processes were complete, and scanned the finished product for variations from the provided spec.

The tank beeped when it was done. The cover swung open.

Adam sat up. Seemed to stare at me.

I shivered when I saw that face from an old photograph resurrected; a man who had lived as a slave and died almost two hundred years ago, back in the world once more.

Reborn as a slave. *By my hand.*

"You can go back to the trailer now, Adam," I told him in a thick, clotted voice.

"Thank you." The tall black man he had become climbed out of the tank, and still dripping the salty waters of his rebirth, walked past me into the night. More of my work became obvious as he passed by.

I followed him, and got outside and on my knees just before I threw up.

As I mentioned before, I never sleep very well away from home. That night the several more beers I drank after getting sick didn't float me into a peaceful sleep. I tossed and turned, and my dreams were full of faces. Ghostly faces, unwillingly dragged back to lives from which death had released them.

Early that next afternoon, the Colonel once again came out to see how I was doing. This time he was in a wheelchair, an old unpowered wooden antique with wood-spoked wheels, and a caned seat and back. It was pushed by a tall, dusky-skinned woman in a starched white nurse's uniform. Her facial structure and the mark on her forehead made it clear that she was either an immigrant from India, or a traditionalist. Or it could have been fashion.

Bodeen looked pretty chipper. "How are we doing today, Jeff?" he asked brightly, checking out the reshaped bods and looking pleased by what he saw.

"OK, I guess," I answered in a dull, spiritless voice.

He turned back to stare up at me, frowned. "Are you all right, son? You're looking a mite poorly."

I waved it off. "Just having trouble sleeping, that's all."

A commiserating nod. "Ah've had trouble with that one myself, sometimes. Now when it happens, Sidra here gives me a shot. It's in the ass. Ah guess ah should be glad it's not in the head."

I couldn't help smiling a little. "I guess getting a shot is better than getting shot," I agreed.

"Damn straight." He waved his cane at the short line of unshaped bods. "Looks to me like you are coming down the line on this stage."

"Yes, sir. Just seven more left to be body-sized."

"So next you get skin on them all so they don't look like they were made out of fungus, right?"

"Right. Then the final step is downloading the persona imprint programming to turn them into individuals. Our top personifier is a woman named Kendra. She should have most of that pretty well ready for me tonight. I'm hoping to start imprinting them tomorrow."

The Colonel beamed at me. "Excellent. How real will they look after you put skin on them? Will ah be able to tell that they're not real if ah get as close to one as you are to me?"

"No." I hesitated a moment, then said,

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"I can show you an example. I did one last night." I turned my head and raised my voice. "*Adam!* Please come out and join us!"

Bodeen and his nurse turned toward the trailer being used as a bod-garage. After a moment, Adam emerged, the coal-black skin of his upper body glossy in the light. That morning, looking at him had bothered me, and seeing him naked had bothered me even more. So I'd gotten a pair of ragged canvas pants from the pile of period clothing the Colonel had provided, and had him put them on. With his giveaway sexlessness covered, he was as human-looking as me. Even the blank expression on his face added to the air of reality. It gave him an air of trained stoicism, like a soldier at attention. Or a slave following orders.

The nurse paled and her eyes went wide. I could tell that he was far more real-looking than she'd expected. The Colonel was harder to read. I saw a mixture of surprise, amazement, and maybe just a touch of revulsion.

Adam reached us and stood waiting for further orders. "Turn in a slow circle," I said. My own face was as closed as Adam's, but inside, my emotions were churning so hard and in so many directions, I'm not sure what I felt.

The bod did a slow turn, bare feet shuffling in the dust. When his back came into view, the nurse let out a thin mewl of alarm. "What has happened to him?" she asked in a small, choked voice.

"Nothing," I replied tonelessly.

She gestured. "But his back . . ." Her voice trailed away.

"Those are the scars a bullwhip leaves on human skin," the Colonel explained quietly. He peered at me. "Formed in when you applied the skin. Just like the less obvious scars at his ankles."

"Yes sir." I wasn't sure how I wanted him to react. Part of me hoped that seeing Adam would make him decide to pull the plug on the whole misbegotten project. There was also a part of me that wanted his approval.

A slow nod, his eyes never leaving mine. "Very authentic."

"You said you wanted perfect replicas," I said stiffly.

A pained smile spread across his face. "So ah did, son." He turned to gaze at Adam a moment, face settling into an unreadable mask. "So far you have met and exceeded mah every expectation."

Then he sighed and settled his cane across his lap. "Please take me back to the house now, Sidra. Ah believe ah have seen enough."

"Knock knock."

I looked up from tank four's readouts and saw Anton Samuels standing in the open rear doorway of the trailer. "Come on in," I called.

"Thanks." He came up the step but stayed near the entrance. Once again he was dressed in regular clothes, not that awful uniform of his. Hanging from his right hand was a plastic cooler, from the other a wicker picnic basket. He hefted them up. "Thought maybe you might like a beer and something to eat."

I checked my watch. It was after nine in the evening. I'd been running the bods through the tanks nonstop since about four, and had completed about thirty so far. I'd hoped to get half of them done before I quit for the night, but that was looking less and less likely. Each one had seemed to require my full attention so it would come out as perfect as Adam. And they had. This was some of the best work I'd ever done, and each emerging bod made me feel just a little more frightened.

I was worn out and worn down. A break was just what I needed. "Sure. Let's go back outside."

We settled in on the wide step leading up into the trailer. It was a fine night for a picnic, balmy with a bit of a breeze. Twilight had fallen, the western horizon glowing with red, and stars beginning to appear above us. Anton handed me a beer, then began preparing a plate from

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the contents of the basket. He heaped it up with portions of fried chicken, potato salad, baked beans, and hot corn bread.

"Colonel Sanders?" I said as I accepted the plate.

"Colonel Bodeen. His cook Willy, anyway. The Colonel has been watching you work and noticed that you seem to be skipping meals. You in a big hurry to get this job done?"

"I guess I am."

"This job's still making you real uncomfortable." It wasn't a question.

"Yeah, it is. Now more than ever. The whole thing keeps kind of, I don't know, *shifting* under me. First I didn't want to make black bods for some crazy old rich guy to use as toy slaves. Then I found out it was more complicated than that, and so was he. So I managed to kind of come to terms with it. But then the job sort of took over and I started doing some of my best work yet, and now that I see what I'm making it's gotten kind of . . ." I shook my head, tried again. "I look at what I'm doing and I start to feel sick. I look at them and it's like I've called ghosts up out of the ground."

"Lots of ghosts around this place," Anton agreed. "Going on three hundred years' worth."

I gazed at the bods I'd completed so far. They stood in a loose grouping off to one side, quiet and unmoving as statues. "I understand why the Colonel wants me to do this, but it feels *wrong*, it feels . . ." I slugged back part of my beer, unable—and unwilling—to say more.

Samuels reached over, patted my knee. "Tell you what, my friend. You eat some of that chicken before it gets cold, and I'll tell you a story. Maybe it will help."

He didn't wait for me to agree, just started talking. I picked up a drumstick and took a bite. Suddenly I was ravenous. That chicken was the best I've ever tasted, before or since.

"Beau was born to money, and has made a fair amount himself. He always gave big to charity. After Miss Caroline came along, they began taking a more hands-on approach to that giving. One charity they supported was Back To Life, which maintained halfway houses for drug users in several major cities. When they visited the one in Boston, they met this messed-up guy who tried scamming Miss Caroline out of a few bucks. This loser was on his way out of the program, and not to a better life either. Don't ask me how, but Miss Caroline saw something in this fool, and offered him a job as houseman. He took it, figuring to live off these dumbass rich folks a month or two, score a bunch of their stuff and split."

He saw the question on my face. "No, doing the Samuels routine wasn't part of the job. After I'd been here a month or so I started getting schitzy, mostly because I was having a hard time dealing with the fact that I liked them and my job. So I just started doing the Samuels thing one night when they had company. I guess I was thinking I'd get myself fired."

He smiled a sad smile. "Their guests didn't know how to react, but Miss Caroline did. She started playing off me. Then so did Beau. After their company left, we laughed our asses off, the three of us sitting in the parlor like best of buds. It was that night I got it. They *liked* me. They accepted me. I could be part of the good thing they had here if I really wanted to."

His voice dropped lower. "Beau and Miss Caroline saved my life, Jeff. They saved me from ODing in some alley, or spending the rest of my life in prison. One stipulation they made when they hired me was that at some point I had to go back to school. After the night I first did Samuels, I started studying in the evening. Not at some community college, but right here with tutors they brought in special. Thanks to them, I've got an ABD in American History."

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He saw the surprise on my face and chuckled. "So what am I still doing here? First off, I get paid more than any teacher or professor could ever hope to make, and the job gives me plenty of free time. I've already written one book, and am well into a second."

His pleasure faded. "I could've left any time I wanted, and was even half thinking about it just before we lost Miss Caroline. After that, there was no way I could leave Beau alone, and to be honest, I needed him as much as he needed me. Losing her hit me harder than losing my mother ever did."

"But that stupid Stepin Fetchit routine—" I mumbled around a mouthful of cornbread.

"I could drop that any time I wanted. Beau's asked me to plenty of times. But back then it was something the three of us used to do to make eyes glaze and jaws drop, and now doing it helps keep one more little bit of *her* alive for both of us. Making him play always perks him up a bit, mostly because he chews me out for subjecting him to it later. As you noticed, he needs all the perking up he can get."

This time my mouth was momentarily empty. "What's killing him, Anton?"

"This and that. Mostly he's just dying to see his Miss Caroline again. He hasn't got long left. I plan to make his last days as easy and as good as I can make them."

"OK, but I still don't understand why he insists on going though all this with the slaves. You said he really doesn't want to do it."

Anton opened a fresh beer for each of us. "Less now than before. Seeing the one you call Adam really rocked him. Once he made it back to his room, he broke down and cried. But this is what he thinks Miss Caroline wanted, and he's determined to give it to her no matter what it costs in money and hurt. It's the last gift he can give her before he dies."

"Jesus. And there's something he wants from me, but he won't come out and tell me what it is."

"He wants you to do it right, and in a way he can live with. I'm not sure what he's looking for, but there's something, and he seems sure you and no one else can give it to him."

I hung my head. "What should I do, Anton?"

"Try your best to give him what he wants. And what he needs. That's what I do. That's what I'm going to keep doing until he's gone."

I finally managed to make myself ask the question troubling me the most. "*But what about the ghosts?*" I whispered.

He rested his hand on my shoulder. "You're smart, and damned clever. Maybe there's some way you can give them what they want, too."

Come midnight, I was still sitting there. Anton had gone back inside an hour before to settle the Colonel in for the night. I watched the Moon rise, and in that silvery light I could more clearly see the bods I had tanked so far. They stood there, still, impassive, silent. Their eyes glowed white against their black faces, and they all seemed to be staring into the distance.

Adam stood at the head of the group, and he too seemed to be gazing toward some place far beyond the confines of the yard where he and the others had been reborn.

They were still empty vessels. Just machines. If anybody could know that for sure, it was me.

But I just couldn't shake the feeling that each one carried inside it a ghost I'd somehow called up from the black earth of the graveyard and the black pages of history, a spirit drawn from its rest and put back in chains.

I realized that it wasn't the Moon that Adam and the others were staring at, but the Big Dipper and the Pole Star which had guided humanity for centuries uncounted. Or at least that's what it looked like they were doing.

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My imagination was getting the better of me. Work was at a standstill, and it was past time for me to check back in with Kendra. So I hauled my sorry butt up and went to the truck to make the call. Right or wrong, I'd finish this job to the best of my ability. I'd download the imprints she'd prepared into my workstation, then call it a night. In the morning Adam and the others would be given their personas.

I hoped maybe that would be enough to drive out the ghosts.

Sometime around two I awoke in a cold sweat.

I'd dreamed of chains, cold heavy unbreakable chains. A faceless mass—the stockholders, I guess—had put Kurt in chains. He had me in chains. I'd put Adam and Delia and the others in chains. Miss Caroline had put the Colonel in chains, and he in turn had put another set on me. All of us were out in the yard and bound together, and everyone seemed to think I had the key to set us all free. But I was as much a prisoner as they were.

I struggled out of bed and went outside, panting for breath in the night air. What I really wanted to do was start running, and never turn or look back. Instead I stood there in my underwear, trying to absorb some of the calm of my surroundings.

The bods were right where I'd left them, eyes patiently turned toward the sky.

My gaze was drawn to the star they seemed to be watching. Maybe if I made a wish . . .

To this day, I'm still not sure if I really heard a voice whisper in my ear. If I did, it was a woman's voice, low and throaty and musical, and carrying a deep and, well, *wicked* humor in every note.

I guess it doesn't matter if Miss Caroline spoke to me or not. What does matter was that at last I held the key. I knew what I had to do.

So I went back inside and called Kendra one more time.

It was a relief to return to Detroit. I'd been back about a week, and after taking a few days off, I started working designing a maid for a certain infamous society woman who was sick and tired of having her help quit after a year or two to write a lurid tell-all.

The face of Luc Malle, Boditexx's receptionist, appeared on one of my workstation's screens. "I have a call for you from Colonel Beauregard Bodeen, Jeff," he said. "Are you in?"

Usually the answer to that question is no, but I'd been expecting to hear from the old man, waiting with a mixture of hope and dread. "Yeah, I'm in," I answered. "Put him though."

Colonel Bodeen's image replaced Luc's. "Mistah Davis, so very good to see you again," he drawled.

"And you, sir. How are things going?"

"Well, ah seem to be having a small problem with those bods you done up for me."

"I'm sorry to hear that," I returned blandly. "What kind of problem?"

"They seem to be *disappearing* on me, Mistah Davis. So far seven of them have come up missing."

"Is that so?"

"It is, suh. Samuels took me down to have a talk with the ones that remain. They were a tad evasive, and didn't come right out and say what had happened, but it would appear that the ones ah've lost have run away to freedom." A slow blink. "Just like real ones might have done."

"Imagine that." I was still managing to keep my voice flat and face expressionless, but my palms were sweating and the tension was a band wrapped around my chest.

"That Adam and Delia were the first to take off, the two of 'em disappearing in the night. Then Jim and Matthew come up missing. Then three more run off after that. Ah wouldn't be surprised if every one of them was gone before

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the month was out."

I took a deep breath, then spoke carefully. "If you are disappointed with the product we've provided, sir, I can switch you over to Kurt Yeo to discuss the problem."

The old man peered at me, and little by little a faint and approving smile appeared. "Ah never said ah was disappointed, son." His eyes searched my face. "Though ah am a mite concerned about what might happen to the ones that run off."

"I wouldn't worry. I'm sure they went someplace safe."

Each one had traveled due north to a rented warehouse about five miles from the plantation. There each one received a final imprinting from a hastily trained Anton, getting a memory of escape and freedom that was allowed to linger for a while before all memory faded to nothing. If there really were ghosts in those people I recreated, I hoped that memory laid them to rest and gave them peace.

Bodeen nodded gravely. "Ah surely pray that is so. Well, suh, it has been an honor and a pleasure working with you. Your reputation as an artist and genius are entirely deserved. Although there were moments when we both had our doubts, ah do believe ah chose exactly the right man for this task."

"Maybe you did, Colonel," I replied. "Maybe you did."

About four months later, Colonel Bodeen died in his sleep.

He left generous bequests to all his household and grounds staff, all the cleaning women and groundskeepers and fieldhands given two years pay. Sidra was given enough money to go to medical school, and the cook, Willy, enough to open his own restaurant.

The plantation, and enough resources to keep it going for many years to come, were left to Anton Samuels.

It was only in his will that the Colonel ever directly addressed the matter of the hundred bods he'd purchased. As with the rest of his affairs, he made his wishes clear and covered the cost of their implementation.

Eighty were to be donated to various nonprofit groups for use as staff, security, or to sell for the proceeds. Each bod came with enough money to cover the cost of our remorphing it into a suitable form. Eighteen were retitled back to me and Boditexx for reprocessing and resale, bonus for a job well done.

That left two, ones specifically chosen by Bodeen. If Anton was agreeable, Adam and Delia were to be remorphed to resemble the Colonel and Miss Caroline, and allowed to live on the plantation with him.

I took the two bods down there personally, then worked with Anton to find out what he wanted to do with them. That helped Kendra and me perfect their personas for that role. We might have done our best work yet.

They live in that big old mansion with Anton, greeting customers and visitors to their home, and showing off all the work they'd put into the place. They think of themselves as retired, and Anton as the beloved son who runs the place for them.

Most nights find them sitting on that wide back porch where I first met Colonel Bodeen. Sitting side by side and hand in hand, spending endless contented hours gazing at the North Star, and feeling no urge to follow it.■

Tradition is a guide and not a jailer.

—W. Somerset Maugham

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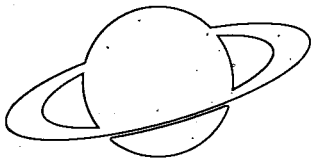

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Bud Sparhawk

Illustration by Kelly Freas

Who but Sam could arrange something like this—
whether he wanted to or not?

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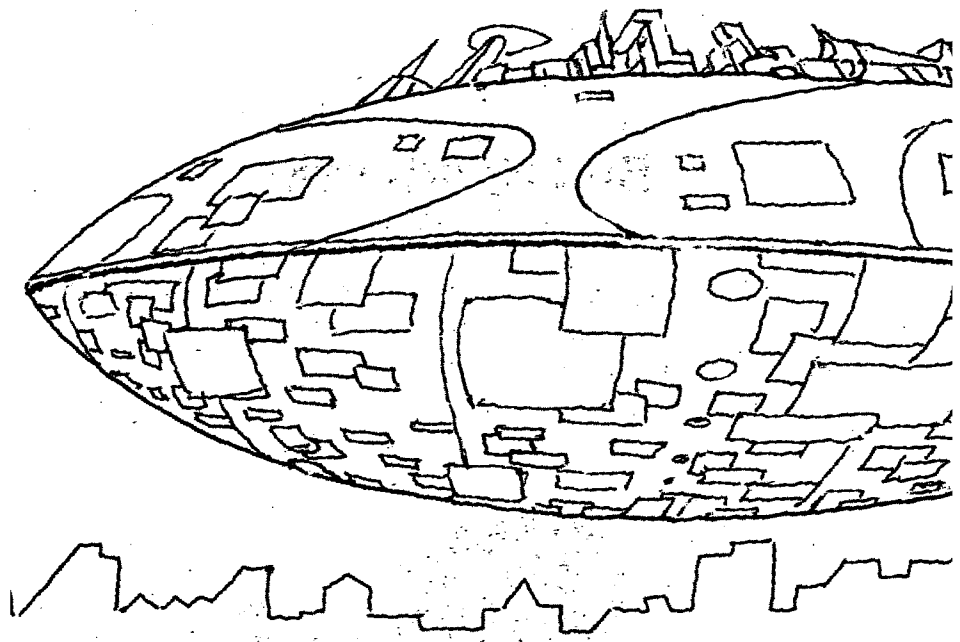

Sam Boone's Super Fantastic Intragalactic Ass-Kickin', Body-Slammin', Foot-Stompin' Rasslin' Extravaganza

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The surviving city fathers of the former Kansas City appeared to be somewhat upset over the devastation wrought by the quintet of alien Devitts Sam had sent their way a week earlier. "Crumptonian Tours and Transport bears no responsibility for the conduct of their tour groups," he calmly explained to the mayor, who was screaming at him over the telephone. "Besides, I believe it was certain deficiencies of service and lack of consideration of their beliefs that caused the Devitts to undertake their drastically creative civic improvement." That particular embellishment had made the evening news with shots of the fires still burning out of control.

The mayor said something, but Sam could not understand him over the screaming and shouting in the background. "Just give everyone time to adjust," he suggested. "I'm certain that the crater will eventually fill in with water and create a perfectly lovely lake, a jewel of which your city will become quite proud."

This statement was followed by what Sam took to be rather incoherent expressions of gratitude, none of which he could hear clearly owing to the impatient ringing of his private phone, a ring that most certainly meant an urgent call from the head of CT&T, Mardnnn.

"Med zem Addeled Mens at spazzepurt ina whore," Mardnnn exclaimed with what was, for him, rather clear diction. "Takem otel, Shamm."

It was a routine request, one of many similar ones he had responded to since starting to work for Mardnnn. Apparently this time he was to meet a group of mentally deficient aliens at the spaceport. The "in a hurry" was taken for granted. Mardnnn always seemed to wait to the last moment before calling Sam. Still, he couldn't help but wonder why the Galactics would send some "Addled Men" to Earth. Of course, that made as much sense as anything else they'd done since discovering Earth's wonders.

Since Mardnnn had not specified which "otel" these poor souls preferred, Sam decided to book them at the Trenton Ambassador. Not only could that hotel handle alien visitors, but the manager kicked back a nice unrecorded five percent in cash. Yes, the Ambassador would be just the place for this group.

"And where shall I take them after I get them in the hotel?" Sam asked. "Kawasaki's Sushi 'n Ribs, Disneyland, or Hoboken?" These were the three favorite alien attractions on Earth.

"Pfaugh! Ziss iz buzness," Mardnnn replied and proceeded to explain that the Galactics had developed a vast admiration for Earth's wrestlers—something they'd undoubtedly learned through exported videotapes. Sam wondered why such tapes would find a receptive audience and then gave up—alien madness for Kawasaki's Sushi 'n Ribs, Disneyworld, and Hoboken were puzzling enough.

"Addled ones and Vrm zendin' team for match!" Mardnnn mumbled. "Everyone iss comink. Zettle big problem. Lotsa money." Sam deduced from Mardnn's mangled language that these two sets of aliens had decided that teaming with some of Earth's most famous wrestlers would help them settle their dispute.

"I understand," Sam said before Mardnnn could finish his bubbling explanation—Mardnnn was out to make a bundle, but—"Don't they understand that the matches are, uh, staged?" Sam asked as politely as he could. Such subtle aspects of Earth's culture were often lost on his boss, not to mention several alien races.

"Detailzz," Mardnnn sneered dismissively. "Iz arranged. You talk to WoWi-WrA." Which, after considerable misunderstanding, Sam realized were the initials for the Whole World Rasslin' Arts group and not another alien race. "Make arrangemenz."

Sam watched in amazement as the huge shuttle settled onto the apron at

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the Trenton spaceport, a hastily constructed expanse of concrete created practically overnight when the Galactics had declared their preference for a site convenient to Hoboken. The huge shuttle dwarfed anything that humanity had ever gotten off the ground, and that included the new, two-thousand-passenger flying wedge in Paris that had been boarding passengers for the past week. Takeoff was scheduled for tomorrow—or the day after, maybe.

Sam's CT&T badge got him past customs, the police barricades, the press, and a solid phalanx of shouting Pakistani and Chinese taxi drivers eager for riders (the Galactics tipped really well.) He managed to reach the ramp just as the shuttle's hatch dropped. He held up the CT&T sign so these demented souls would know who he was. He hoped they had someone along who could read English.

A purple thing resembling a cow with poetic aspirations descended the ramp and trotted past. It was dragging a bluish angular creature with what appeared to be four or five heads, all of which were yipping excitedly, at the end of a silver leash.

Several small aliens, each possessed of far too many appendages, pushed excitedly past Sam. They were sort of cute; pale gray with a touch of green, like the dish of bad calamari he'd regretted eating a few nights before.

Four behemoths stomped into sight, causing the ramp to buckle alarmingly. Sam had never seen such an ugly group in his life. They looked like a mutant cross between a six-legged elephant and a besotted squid, but the size of a horse. Two baleful red eyes peered from beneath the ugly mass of tentacles that ringed the thing's head.

The nearest one exposed a sharp-tooth-ringed orifice and stuck out a bluish tongue about two feet long. "Slurrrrp," it said and, a moment later, a well-modulated voice spoke from the thing's midsection: "We are the Addlemon."

Well, Sam thought as he ditched the sign, so much for understanding Mardnnn. "Sam Boone, your escort," Sam beamed and smiled. Always smile, he'd learned in his brief tenure as interstellar guide; sometimes it frightened the visitors enough to make them tractable.

"Sluurrrp . . ." There was a pause; "We are ready to depart," the lead Addlemon pronounced. The other three noisily slurped agreement, tongues waving furiously.

Sam doubted that the single van he'd arranged would hold these monsters. "Hey," he shouted to the noisy group of taxi drivers, "I need some vehicles."

Their reaction was less than enthusiastic, but after considerable haggling, which cost him most of the money he'd make on the kickback, he managed to squeeze each of the three Addlemon into the largest cabs. He hoped language wouldn't be a problem if the drivers proved chatty.

At the Ambassador, Sam tried to explain a few simple facts about Earth's wrestling culture to Cxott, the chief Addlemon. He was surprised at Cxott's attentiveness and actually had hopes that he had achieved some understanding of the true nature of the wrestling phenomenon. He knew that Mardnnn would be disappointed, but at least they would avoid embarrassing their alien visitors.

Cxott listened attentively and then launched into a vivid description of what it expected from the forthcoming match. They would, Cxott slurped, "Destroy the opposition with the help of Earth's supermen. Yes, we will grind the Vrm filth and their minions into dust under our hooves."

"I don't think you quite grasped the essence of what I just explained," Sam protested. "These guys aren't really supermen. They're just—"

"No need to explain—we have seen the evidence. It will be glorious how we will use their superior skills and strength

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to render the Vrm into shredded meat."

"No, no. You don't seem to understand."

"We will crush the Vrm's skulls and make stew from their entrails."

Sam sighed. It was clear that he just wasn't getting through to this group.

After returning to the office, Sam had to make arrangements for the Vrm as well. He thought it would simplify things if he put both sets of aliens in the same hotel, not to mention that the extra kickback would do wonders for his bank account.

Brill, Mardnnn's son or daughter (it was hard to tell with the Crumptonians) bounced through the door, off the wall, and settled on the corner of Sam's desk. The motile Crumptonian was his or her usual hyperfrenetic self.

"What'cha doin', Sam?" Brill's absolutely perfect New York accent was in sharp contrast to the vocal deficiencies of his/her father.

"I am trying to make certain we have some rooms for the Vrm at the Ambassador," he replied. "When I checked in the Addlemon last night, the clerk said they were almost booked."

"Uh, Sam?" Brill chirped, a note of worry coming into his/her voice as she/he fiddled with an eyelid. "I think you'd better find someplace else. Some place farther away—like Manhattan."

"Oh, do you think the Ambassador is already full?"

Brill hesitated. "No, but I think that you'd better not put the Addlemon and Vrm anywhere near one another. They sort of have—what do you call it?—a little animosity toward one another. That's why Pops set up this match."

"A little animosity?" Sam had learned that Brill's estimates of importance varied widely from what he considered reasonable.

Brill shuffled his/her tentacle about nervously. "Didn't Pop tell you? They've been at war with each other for about five of your centuries. Kill each other on sight, they will. This match is to keep them from starting a war."

"Urp!" Mardnnn had obviously neglected to expand on that particular point when he mentioned that there was a "dizpute." "Oh my God, and they're going to be wrestling next week!" Remembering Cxott's words, visions of mayhem, destruction, and death flashed through Sam's mind—not to mention the possible lawsuits that might ensue, with emphasis on the *sue*.

Four phone calls later, Sam found rooms for the Vrm. It was a nice quiet bed-and-breakfast on 44th. Mrs. Runyon, the proprietress, sounded like a nice old lady, and was very anxious to please. "Oh, I do enjoy tourists," she'd said sweetly. "They are so *interesting*."

Interesting was not the word Sam would use to describe the Vrm. They were dead-ugly gray-green reptilians with claws, razor-sharp talons at each of their four elbows, needle beaks and a very, very unpleasant disposition. Those attributes alone would have been daunting enough, but what made transport infinitely worse were the twenty or so things they dragged along; small creatures that had the worst aspects of crocodiles and wart hogs, but were not nearly so cute.

"Pets?" asked Sam as he jerked his leg away from their snapping jaws.

"Dinner," hissed the Vrm with a nice approximation of a French accent.

For some strange reason, the usual pack of clamoring taxi drivers seemed to have evaporated when the Vrm and their pets emerged from the shuttle. Sam was forced to squeeze the foursome into his van. They had to hold their animals on their laps. Sfilth, the apparent boss of this group, kept his share of the take-out from chewing Sam's arm off, although Mardnnn was going to have to pay to have his coat's sleeve fixed.

Sfilth's conversation along the way was an endless litany of explicit and indelicate explanations of the many ways

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the Vrm would tear at their opponents legs and limbs and how, once those were disabled, they would start on the rough stuff. "Which is why we requested the Deadly Duo—Earth's best, for our team. They will ensure that we shall conquer and destroy these despicable beasts."

All the way to the B&B, Sam worried how the nice Mrs. Runyon was going to react to these guests that were, he thought, rather a bit more than "interesting." He hoped that her heart could take it.

"Oh," Mrs. Runyon laughed when Sam mentioned this after she'd finished escorting the Vrm to their accommodations and had locked their dinner in the bathroom at the end of the hall. "They're not nearly as scary as those Chicago tourists we had last month."

"Fantastic! I'll bet we're going to get the entire stadium sold out!" Josh, the event promoter, boasted when Sam walked into his office. "Never had such a quick sell-out in my life. This is going to be the greatest event in the history of the sport. The ultimate match! Superhumans and alien monsters in a duel to the death!"

Sam realized that this man didn't understand how real his hyperbole could become. "About the match," he began, hoping that he could achieve a level of understanding with at least one participant in this mad arrangement and quickly explained what the aliens had said.

Josh waved his cigar about when Sam finished. "Great PR stuff, boy. But don't worry about a thing. Me and Martin got the whole thing laid out. This sort of hype will get the folks excited as all get-out. Then we'll give them a bang-up job—our boys know how to do that, that's why they're the best. Excitement. Aliens. Supermen. That's what everybody wants to see."

Sam tried to interrupt. "Maybe I wasn't clear enough."

But Josh wouldn't give him a chance to explain further. "Got a million details to take care of here, Sam. Glad you have the boys from out there settled down. Hey, can you get some more pix of those guys? Great outfits, by the way. Scary. People will eat that up, I tell you. This was a stroke of genius, bringing in alien pros to team with ours."

"These aliens," Sam again tried to interrupt. "They don't understand . . ."

Josh ignored him. "Don't worry about it. I'll tell the boys to play it by ear. The King and Eye and the Deadly Duo are the best in the business. They know how to give the crowd a good show and, hey, with those monsters in the ring with them, the people won't be able to keep their seats."

Josh stopped and stared at the ceiling for a second, his expression as if he'd glimpsed the gates of heaven. "Hey, what did you think about the tag team idea? That's the way we're staging this—lots more excitement with a mixed crew; human and monsters paired off. God, this is going to be so fantastic, that's what: Alien wrestlers and human supermen, paired in a cosmic duel, no holds barred."

"I just told you that these aliens want to wipe each other out," Sam screamed in frustration. "They aren't professional actors—they're dangerous, deadly killers!"

Josh stared at Sam for a few minutes, puffing on his cigar. Finally he spoke. "Great, but we'll have to play up the killer part more when we talk to the press. How about 'murderous killers?' No, too easy. 'Kill-crazed alien monsters?' Don't worry—I'll work on it some more before we put it out. Great idea, Sam—ought to really get the buzz going. Tell Marty I said you were the greatest." He framed a picture in the air with his hands. "I can see the headlines now—ALIEN KILLERS BATTLE TO THE DEATH."

Sam was certain that the event would make the headlines Josh fantasized. He just wished that they

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weren't going to be so literal.

Sam was desperate. All that the promoters of this madness could think about was the fame and the money, and the aliens were so blind with hatred they couldn't understand what was really going on. In one last desperate move, he decided to try to talk some sense into the human wrestlers. At least he could keep them out of the ring and, hopefully, alive.

The Deadly Duo went by the improbable names of Fangs Alott and The Flenser. Sam traced them to their training quarters, where they were working out, aided by four "personal trainers," who shared two and a half bikinis among them. It was all Sam could do to keep his mind on business.

"I think you might have a certain misapprehension about this match," he began after he introduced himself.

"Wasssat?" The Flenser replied as one of his trainers leaned over to retrieve the water bottle he'd dropped.

"I think you should call off the match," Sam continued. "It seems that these aliens are —"

"You calling us cowards?" Fangs barked as he dropped a five-hundred-pound barbell to the floor. "We ain't no freaking cowards! We'll take on anybody. Nobody beats the Duo—nobody!"

"These aren't your run-of-the-mill opponents," Sam protested. "For one thing—"

"You trying to scare us off, ain't you?" Fangs continued angrily. "Yeah, and make us forfeit the purse. Yeah, and I bet you work for those two jerks we're supposed to fight, don't you?"

"No," Sam protested. "I'm not . . ." He took a step backwards and stumbled into the petite redhead wearing one-fifth of the bikini inventory.

"Hey, you keep your hands to yerself!" The Flenser growled loudly as Sam tried to extricate himself from her plastic embrace. "Nobody makes out with my gals."

"I wasn't . . ." Sam sputtered, trying to get away from the pneumatic redhead beauty. She was definitely slow in releasing him, though, a fact that Sam would have enjoyed more had the hulking giant not been advancing on him with fire in his eyes.

"Nobody," The Flenser continued at volume. "Nobody messes with my gals." He swung a ham-sized fist at Sam.

Sam pushed clear of the redhead just as The Flenser's blow caught him on the shoulder and spun him around. He slammed into Fangs, who stumbled backwards, recovered, took a quick step, turned, and leaped back in a move that was obviously well practiced.

Under less threatening circumstances, Sam might have admired Fangs' display of physical prowess, but unfortunately he was the recipient of the leap and went to the mat with the full weight of Fangs atop him.

"We ain't no cowards," Fangs said with his face a mere centimeter from Sam. "Tell that to the King and Eye. We're going to mop the mat with them pansies and their wimpy alien buddies." He yanked Sam to his feet and pushed him doorwards.

The redhead held the door open as Sam staggered by. He thought she mumbled her phone number as he departed but, fortunately, he quickly forgot it.

The King and Eye were the other pair in the match—Prince Gallant and Arthur the Magnificent, by name. Arthur had a regal bearing, a fact enhanced by the gold crown he wore atop his jet-black tresses and the princely way he carried himself. He acted as if he were holding court, even thought Sam and Gallant were the only ones present.

Prince Gallant was the most perfect specimen of male humanity that Sam had ever seen off a romance novel cover: muscular, but not excessively; with long blond hair, coiffed just so; a jutting chin, replete with dimple; beautiful blue eyes; and teeth so brilliantly white that

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his smile was blinding. He was also, as Sam quickly learned, even more dense than Fangs.

"Why are you trying to stop us?" Arthur asked after Sam had carefully explained in exquisite detail the dispositions and declarations of the aliens. "Are these alien guys afraid they might get hurt?"

"Yeah," Gallant added. "I saw pictures of their costumes—really great! Going to be hard not to mess them up."

"They're not costumes," Sam protested with an exasperated sigh. "That's what I've been telling you. That's what they really look like!"

"Great effects, too. Really like the fake claws and elbow talons. Crowd will eat that up."

Sam realized that he just wasn't getting through. "Neither of you seems to understand that those claws, those talons are *real!* And they are going to use them to rip you and your partners to shredded meat!"

Arthur smiled. "Hey, that sort of PR's a little over the top if you ask me, but if that's how the promoter wants to go, we'll play along. Don't worry, we won't give their props away, but they gotta agree not to blow the whistle on our fake chairs and stuff. One hand washes the other, you know."

Fake chairs? Sam took in a deep breath. "Listen to me. I've seen the aliens up close, so I know what I'm talking about. The Vrm are deadly killers, pure and simple. What's worse, they don't know this business is all fake. They saw videos of your matches and think you guys are supermen."

"The Galactics saw our shows?" Arthur repeated with wonder in his voice. "Wow! How about that, Gallant?"

Gallant smiled. "You mean we're Galaxy-wide heros now? About time our agent got us some publicity."

"Forget the publicity," Sam said, his voice rising to a screech. "The Addlemon and the Vrm are out to destroy one another and they don't particularly care about who gets in their way, which, by the way, happens to include you two."

Arthur mused over Sam's words for a long while, frowning as he tried to work through everything Sam had said. Sam let out a long breath. Finally he had gotten through to someone. Finally, someone was listening to reason.

Arthur brightened. "I get it," he exclaimed. "You want us to act afraid—play up to their gig. Is that it?"

The publicity campaign had gone into high gear and the streets were mobbed with people trying to get into the arena. Getting the Addlemon and the Vrm separately into the arena without incident was fraught with difficulty, but Sam finally succeeded in getting them into the dressing rooms on either side of his. Through the thin walls he could hear them sharpening their claws, gnashing their teeth, and beating their tentacles against the walls in nervous anticipation. The sound of these actions grated on Sam's nerves, which were already taut as a Z-string.

The boisterous crowd had been filtering into the arena, their roar becoming louder and louder as Sam busily dialed one number after another, trying to find someone—anyone—who could put a stop to this ill-fated match. Thus far he had exhausted the local, city, and state politicians, most of the Congresspersons he could get to answer their phones, and was now desperately trying to get a staffer in the State Department to invoke some obscure law about alien visitors so he could prevent the coming massacre.

"Sorry," the weary staffer finally said when she got back to the phone. "I couldn't find anything in the books that could help you. Everything looks legal from this end." She paused. "By the way," she said and Sam's ears perked up at her sudden enthusiasm. "Is this going to be televised or webcast?"

Neither had his attempts to reach Mardnnn been successful. But there had to be someone who was able to divert

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the rushing engine of disaster. There was going to be a bloodbath and the innocent blood was going to be on CT&T's hands. That some of the blood was going to be the Deadly Duo's didn't make the prospect any more pleasant for Sam.

There was a knock on the door and a man wearing the latest fashion—diffraction-cloth slacks and tunic—entered. He pushed by Sam and looked around with obvious distaste, as if he were not used to being in such squalid surroundings.

Sam noted the expensive clothing, the manicured nails, the $500 hairstyle, and the bulge in his tunic that might be a gun. The man was definitely, without a doubt, a criminal, a slick mafioso.

"I heard from the mayor that you're trying to stop the match," he began quietly. "I just want you to understand that the members of the syndicate have a great deal invested and want this to be worth our while. We would be really, really upset if we lost our money." He paused and looked straight at Sam through squinting eyes that beamed malevolence.

Sam gulped but said nothing. The mafioso continued, "I'm sure you understand our position. We can make it worth your while to make sure things go well tonight." He polished the nails of his fingers on his glimmering tunic and examined them for a moment before blowing on them. "On the other hand, if anything were to go wrong tonight, it could all go away just like that," he said amiably with a delicate flick of his fingers. "And *that* would make us really, really unhappy."

Sam gulped again. The implication of the gesture was perfectly clear: he was just a mote in this gangster's ice-cold eyes, an insignificant player who could be easily disposed of should he displease them.

"I hope I've made the syndicate's position clear," the dapper gentleman continued.

"Perfectly," Sam gulped a third time, exhausting the moisture in his mouth. He wondered if the FBI was accepting volunteers for the witness protection program.

"Later then, Sam," the man said pleasantly. "Have a nice day."

In situations such as this, there was only one thing for the honorable man to do, and that was to see it through to the end. Fortunately Sam was not that foolish. He owed his unblemished hide to following his instincts for survival and hastening away from dangerous situations—and this particular situation seemed highly dangerous.

He ducked out the door and sulked down the concrete corridor behind the bleachers. He hoped no one would recognize him as he made his way to the large metal doors at the end of the hallway. Once through them, he'd head for the hills and hide out until he could safely make his way to someplace where they'd never heard of aliens, or wrestling, or wanted men, as he would surely become in a matter of hours when they finished gathering together the various parts of the victims.

He was within five paces of the door when it suddenly flew open and a thundering wave of alien bodies poured through. The variegated crowd was so thick that it was all he could do to keep from being crushed under their cilia, tentacles, claws, proboscii, wings, armor, slime, and other appurtenances. It was Mardnnn's ticket holders. No matter how he struggled, he was relentlessly pushed backwards, away from safety and toward the arena, toward a destiny he did not desire in the slightest.

And then it was too late. The crowd roared as the lights went up and two scantily clad women—Sam thought he recognized the redhead—bounced around the ring holding up pictures of the Deadly Duo and the King and Eye.

Sam looked around desperately and spied a man in referee's clothing walking by.

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"You've got to call off the match," he pleaded as he followed the man toward the ring. "These aliens are intending to maim and kill one another. They don't care who might get hurt in the process."

The referee looked at him with a twinkle in his eye. "Listen, buddy, don't give me any more of that publicity crap. I'm already sick of it. Besides, I can't stop the match. Hell, I'm just doing this gig until I can get a decent role."

"You're an actor?" Sam asked incredulously.

The ref looked around and pulled Sam aside. "Hey, keep it down—we've got to preserve the illusion," he said wryly. "Look, I don't know what you've been drinking, but—duh?—what did you think this was—the freaking Olympics?"

Before Sam could continue to pursue this fascinating look into professional sports administration, a flock of broad-breasted blondes in black leather, chains, and studded collars flounced from behind, driving Sam and the ersatz referee ever closer to the ring.

"LATEEZE AND GENTAMEN—THE DEADLY DUO," screamed a ten-billion-decibel loudspeaker system that momentarily stunned the crowd with a sonic blast of hyperbole.

Behind the blonde heads, Fangs was marching along as if he owned the Earth. The fool was dressed in a resplendent cape decorated with skull and crossbones. In each of his huge hands he was brandishing a roaring, screaming chainsaw that he waved at the hissing, jeering crowd, forcing them back to avoid the whirling blades.

"Those are his stage props," the referee confided. "Aren't they great!"

Fangs was followed by The Flenser, surrounded by his own coterie of plasticized bimbos. Atop the staff he carried was a skull with white smoke pouring from the eye sockets and mouth. As he walked along he shouted a continual barrage of obscenities and insults, egging the crowd to even greater expressions of screaming outrage.

"I take it they aren't the favorites," Sam said rhetorically.

The ref's reply was drowned out by another deafening blast from the speaker system. "AND HERE COME THEIR ARCHRIVALS—THE KING AND EYE!" This time the sonic impact did not still the crowd.

Sam looked across the arena and saw, parading down the aisle, Gallant and Arthur. Both of them were adorned in white fur and surrounded by a flock of virginally dressed young ladies in tasteful white bikinis. Arthur and Gallant were throwing kisses to the crowd and touching the outstretched hands of those closest to them. Shouts of encouragement came from all sides.

"Guess who's going to win," the referee sighed as they approached the ringside seats.

"Don't take any bets," Sam said with resignation. "You haven't seen the rest the Deadly Duo's team."

"Shamm," a familiar voice shouted.

Sam looked around and then down at the alien on his mobility platform. It was Mardnnn, his boss. No wonder he hadn't been able to reach him. "What the hell are you—"

"Muz watch my vestmentzz," Mardnnn mumbled and waved his single tentacle at the empty seat beside him. "Shidt down!"

Sam sat. These were good seats, right at eye level with the ring. Better to see the bloody mess, he thought. He turned to Mardnnn and tried to explain what was about to happen. "So you've got to call it off!" he pleaded when he had finished.

While he was pleading with Mardnnn, all four humans had reached the ring. As Gallant was climbing through the ropes Fangs threw one of his chainsaws. The crowd gasped with disbelief but, with one smooth motion, Gallant reached up, snatched the roaring saw from the air, and killed its ratcheting roar. The crowd cheered crazily as Gallant threw a kiss to

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Fangs in response.

Fangs rushed toward Arthur, who raised his broadsword in defense. There was a clash as sword met chainsaw again and again. Finally The Flenser and Gallant jumped in and separated the two.

"Great routine," the ref whispered admiringly. "That took a lot of practice."

Each pair strutted about the ring, Fangs and Flenser snarling and growling threats at their opponents and screaming obscenities. Arthur and Gallant strode proudly around, ignoring the insults as they continued to wave blessings and kisses to the crowd. Every time either Fangs or The Flenser attempted to rush the blessed pair, the referee would dart between them with an admonishing finger and force them back. The crowd loved it; even the aliens cheered despite the fact that, to them, this ritual had to be as mysterious as a twenty-fifth-order Masonic rite.

Mardnnn had requested that the ring be enlarged to twice its normal size. One might think this was to accommodate all eight participants, but Sam realized it was solely to provide the Addlemon and the Vrm room to carry out the carnage.

But this posturing by the human teams was only the preamble and everyone in the arena knew it. The Duo and the King and Eye were feeding the frenzy of the crowd, working them to a fever pitch so the entrance of the aliens would have maximum effect. It was high theater by any measure.

The crowd's impatience finally reached its end. A thunderous stomping started up near the back and spread down toward the ring as the impatient crowd started chanting for the aliens to show themselves. When this thunderous roar reached its peak, the loudspeaker from Hell blared forth: "AND NOW, FROM THE FAR-FLUNG REGIONS OF THE UNIVERSE, FROM THE DISTANT REGIONS OF KNOWN SPACE, COME THE MIGHTY VAH-RIMMMMMMM!"

As the crowd roared, the doors in the back opened and the Vrm rushed into the arena. The roar was short-lived. An expanding circle of silence grew as more and more of the audience caught a glimpse of the menacing aliens and the lights reflecting off the needle-sharp tips of their claws, talons, and beaks as the pack of Vrm raced for the ring.

There were no escorting crowds of young ladies, no props, no outré actions to inflame the crowd as the Vrm proceeded toward the ring; quiet and deadly, all murderous business. By the time they reached the ring there was hardly a sound to be heard.

Sam noted Gallant's ashen face as the reality of the Vrm's physique finally dawned. At the same time, the Deadly Duo were smiling. No doubt they recognized the Vrm as soul-mates. The Vrm climbed in the ring and glanced around. No strutting here. No posturing. Their deadly presence was evocative enough.

"AND NOW," the loudspeaker screamed at a barely tolerable level—or perhaps the earlier announcements had deadened Sam's ears sufficiently that he no longer heard so well, "OUR MIGHTY VISITORS FROM THE INNER REGIONS OF OUTER SPACE, THE UNASSAILABLE, THE MAGNIFICENT ADDELMONNNNSSSSS!"

As the echoing tones died away, another set of doors flew open and the Addlemon behemoths emerged, each keening and slobbering. A medusa of tentacles waved around their smoldering red eyes as their heavy footfalls shook the arena. There was nary a sound from the crowd as it held its collective breath.

Now it was Gallant's turn to smile as his partners joined him; ripping the ropes from their posts as they leapt over them. The Addlemon were surprisingly agile, despite their size.

Fangs and The Flenser now possessed the expressions of deer caught in the headlights of an oncoming semi. The Flenser glanced nervously about, proba-

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bly looking for some way to gracefully depart.

With a terrible screech that set every nerve of Sam's body into fight-or-flight syndrome, a Vrm—Sam noticed it was Sfilth—raced with claws outstretched toward the Addlemon. The crowd roared its approval. Here was something they could understand.

One of the Addlemon—presumably Cxott—trumpeted a slobbery response and rose on its hind legs, lashing out with legs and tentacles. All the humans in the ring, and most of those in the crowd, held their breath for the collision.

But Sfilth pulled up short. "I disregard your intellect," it said with a half-hearted swipe at Cxott's legs.

"Imbecile," Cxott responded and softly whapped Sfilth on the side. Both aliens climbed back outside of the ropes to join their human partners.

The referee raised his hands as Fangs and Arthur entered the ring. A bell sounded. Immediately the two men flew across the ring to collide with great force and loud exclamations. Oil-slicked bodies flew backwards, bounced off the ropes, narrowly missing the referee as they slammed into one another again and again.

Sam was amazed that anyone could absorb so much punishment and then noticed how the pair were pulling their punches, how the force of Fangs' body slams was being absorbed on his forearms and knees, and how Arthur's unbreakable holds never seemed quite so effective. He had to admit that Fangs was good at his role—portraying evil incarnate as he tortured Arthur to within an inch of his life. Or so it seemed.

The referee was down on his knees trying to see if Arthur had been pinned after being repeatedly beaten by Fangs when Arthur reached out a hand to the extended tentacle of Cxott. They touched and, with a slobbering bellow equal to that of a bull elephant in rut, the Addlemon leaped into the ring.

The impact threw Fangs to the mat. Sam had never believed it possible for a man to run backwards while lying flat on his back, but Fangs managed to do so, screaming and gibbering the whole time, until he reached the far side and made contact with one of the Vrm.

Sfilth sailed into the air to land between its human teammate and the advancing Addlemon. Both aliens stopped and stared at one another for a moment. This was the confrontation they had come for. The audience grew hushed, anticipating they knew not what. The two circled one another warily.

The ref backpedaled as fast as he could, trying to keep the maximum distance from both.

Finally the opponents stopped and braced themselves. Sam cringed, anticipating the violence to come.

"There is no objective reality," Sfilth screamed as it used a razor-sharp talon to rip a meter-long gash in Cxott's side.

"I refute it thus," the wounded Addlemon replied, wrapping his tentacles around the Vrm's midsection and repeatedly smashing that worthy opponant against the mat. Black and green scales flew away with each bone-crushing impact.

"All reality is an artifact of language," Sfilth replied groggily as it raised a limb and sliced off the tip of Cxott's tentacle.

"Language is merely symbology for reality!" Cxott roared and tossed the battered Sfilth from the ring and into the tenth row of seats.

"I'm out of here," the referee shouted as he leaped over the ropes and raced by Sam. "It isn't worth scale if it means getting yourself killed!" Before Sam could react, the man was racing up the aisle to the boos of the crowd, ripping off his shirt and tossing it aside as he ran, symbolically surrendering his putative authority.

The loss of an official presented an opportunity not to be missed. Sam turned and spoke to Mardnnn. "I guess we have to call it off, what with no offi-

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cial."

Mardnnn hummed a bit and then replied. "Iz no problem, Shamm. Get the shirt. You be referee."

"I don't know how to referee," Sam said in his most sincere voice. "Refereeing takes lots of training—years of experience, in fact. Besides, I don't have a license to practice refereeing." He hoped Mardnnn was as ignorant as he was in this area of enterprise.

"Big bonuzzz," Mardnnn mumbled, touching Sam to the core of his heart. "Million glizinta," a coin which Sam knew to be one of the underpinnings of Galactic commerce.

"Only a million?" Sam asked incredulously.

"All Kay, a billion," Mardnnn capitulated. Sam imagined that was potentially more money than he could possibly earn in salary, even with his kickbacks and tips.

"*A billion!*" Sam repeated, dumfounded.

Mardnnn shrank into himself. "You drive a hard bargain, Shamm. Twenty-five billion or nothing."

Sam had the wisdom to remain silent. Visions of a vacation, perhaps to the Gulf, or even an island paradise, were within his reach. But to get to either place he first had to pass through the gates of Hell itself, which is to say, survive in the ring with four murderous Galactics and four muscular thugs. The tawny native girls of his imagined island paradise dissipated like the fragments of a dream.

That's when he spotted the rainbow shimmer of his mafia visitor staring intently in his direction with a hard, steady glare. There seemed no way out—it was be killed in the ring or outside—his choice. All he could hope for was that his death would be quick and painless. He picked up the striped shirt and entered the ring to the cheers of the crowd.

Cxott stood in the middle of the ring, awaiting some response from the opposition. The crowd started a round of stomping—impatient for the carnage to continue.

Sam looked over at The Flenser, who was now supposed to leap to his partner's defense. But The Flenser looked to be having second thoughts; either that or a sudden onset of indigestion, which had brought a distinct greenish tinge to his complexion. On reflection, Sam realized that made him look more Vrm-like.

"Go! Go! Go!" screamed the crowd. The Flenser looked at the crowd, looked at the Addlemon dripping ichor all over the mat, and then glanced to where the battered Vrm had landed, ten rows up. He paused, took a deep breath and entered the ring. The crowd roared its approval. Sam gave the man credit for either bravery or stupidity. Often they were the same thing.

"There is no first cause," the Addlemon roared as it faced the human and whipped its tentacles around with blinding speed.

"Up yours!" snarled The Flenser as he dodged each whiplash with easy grace. To the applause of the crowd, he showed Cxott the finger.

Instead of advancing, a perplexed Cxott stepped back. "I fail to grasp your frame of reference. Explain."

"I'm going to wrap those fucking ropes around you and stuff your ugly head up your ass," the emboldened Flenser shouted with astounding bravado. He moved forward and was encouraged by the Addlemon's retreat.

Without taking his eyes off The Flenser, Cxott touched a tentacle to his human teammate. "I must ponder this unexpected pragmatic attack," he said.

Gallant jumped the ropes and circled around the crouching Flenser. He hitched his shorts, puffed out his chest, and sent another of his dazzling smiles toward the crowd. The crowd cheered wildly and Gallant turned, raising his arms to acknowledge their adulation.

The Flenser raced to the ropes, bounced off and raced to the opposite

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side to bounce again, all this apparently unnoticed by the smiling Gallant. With a bellow, The Flenser rammed his opponent between the shoulder blades. The crowd hissed its hearty disapproval as Gallant screamed in pain and fell forward, clutching his shoulder and rolling in obvious agony. Still on the move, The Flenser jumped and fell heavily on Gallant. In quick succession he threw a quick knee to Gallant's face, put a hammer lock around his head, lifted him from the mat and rammed him head-first against the corner post. The crack of skull against pole could be heard throughout the arena. Gallant fell to the canvas, broken and defeated. One arm fell outside the ropes.

Plott, the other Addlemon, tenderly stroked Gallant's extended arm and then, with speed one would not expect from so massive a being, it leaped in a high parabolic curve to land smack in the center of the ring behind The Flenser.

"Self-referential declarations cannot be predictive in a universe where chaos reigns." One tentacle wrapped around The Flenser's waist and lifted him high into the air.

Fangs raced to his partner's defense. "I'll give you predictions," he roared and poked a finger into Plott's nearest red eye. "Is that freaking real enough for you?"

"All sensation is imaginary," the Addlemon replied as he slammed Fang onto the mat. "It is merely a product of the sensorium, which provides input to the seat of consciousness."

From where Sam stood, it appeared that both The Flenser and Fangs had lost their appetite for rational discourse. Both lay unmoving on the mat.

"The mind is paramount," Sfilth's cohort screamed, flying to the aid of his fallen teammates. "Knowledge is perception and where perception is false, knowledge is questionable." Each statement was punctuated with quick jabs of claw and barb, each of which produced spurts of ichor.

"But we cannot perceive objective reality," the multiply punctured Plott replied as he stomped the Vrm with one huge hoof, flattening him. "Knowledge is merely an approximation of the ideal."

The Vrm staggered to its feet and made a half-hearted swipe at its rival. "So how are we to know?" it queried. "What is truth?"

"Unfair," roared Cxott as it thundered to the rescue. "Self-referential arguments lead only to false syllogisms!"

"The last recourse of the feeble-minded is argument against fundamental principles," Sfilth screamed as he joined the fray.

Sam lost track of the argument at that point, as the four aliens screamed existential and epistemological declarations and tore at each other. He ducked as either a tentacle or an arm flew over his head to land smack in the lap of the mafioso. The mat was becoming slick with alien blood, ichor, and slobber, making footing difficult.

Out of the corner of his eye, he watched Fangs and Arthur bashing at each other with the prop folding chairs while Gallant and The Flenser were staggering up the other aisle with their arms wrapping and flailing at each other in a pretzel of holds and releases. Sam couldn't help noticing that the actions of the four were, it seemed, tending toward the exits. Sam wanted badly to do likewise.

The crowd was screaming, stomping, and shouting as the butchery in the ring continued. Sam was appalled at the carnage, which could easily escalate into interstellar war, with Earth in the middle, if someone didn't stop it. But how?

He looked around and saw the mafioso, who appeared displeased at the way events were unfolding. "Why don't you guys settle this in the courts?" Sam pleaded. "I think even having lawyers would be better than this sort of thing."

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All four aliens stopped fighting and stared at him. "Are you officially invoking Hegemonic Law?" Sfilth hissed in a trembling voice.

"He is the legal official for these proceedings and has such authority," Cxott sighed. "I am afraid that we cannot afford for this to escalate to the Court." It slammed the Vrm to the mat, but not as violently as before. Sfilth swung, but pulled back at the last second so his barb only tore a few inches of Plott's flesh away.

"Neither can we afford the Court," Sfilth pleaded. "You must not invoke the Law, Official."

Sam was dumbfounded at their reaction, but not about to let matters continue as before. "The match is a tie!" he screamed and held up a tentacle and clawed limb in each hand. He had stopped the massacre—he was not sure of how, but that didn't matter.

It was at that moment that he grew aware of the booing that was echoing through the arena. The fans were obviously disappointed by his brilliant decision. Even the alien section was raising a hideous racket.

Cxott slobbered something indistinct to the crowd, and when he finished, all of the aliens flew from their seats and began to come toward the ring. Sam's jaw dropped in amazement as the multispecied crowd advanced. Suddenly, standing in the center of the ring, dressed in a striped shirt, seemed quite unsafe.

As unobtrusively as possible in such a situation, Sam slipped through the ropes and ran up the aisle, dodging various angry fans as he went. As soon as he left the stadium, he jumped into the back of a waiting taxi.

"*¿Dónde?*" screamed the Hispanic driver as the angry crowd erupted from the stadium. "*Por favor, señor—¿dónde?*"

"Anywhere," Sam screamed as he spotted a herd of Addlemon bearing down on him from one side and an angry pride of Vrm from the other. Neither group seemed interested in the other.

"*Aeroporte!*" Sam yelled as he thrust a wad of bills through the slot in the plexiglass window between them. "*Moy pronto, si vous plait!*" which exhausted his command of Spanish.

The cab took off with a scream of tires. Sam sat back and breathed a sign of relief.

"Eh, señor?" the cab driver shouted over his shoulder. "Those things, they are following us, I think."

Sam could hear the panic in the driver's voice and looked through the rear window to discover its source.

The Addlemon were thundering in pursuit, having no trouble keeping up with the speeding taxi. Behind them Sam saw other vehicles—cabs, trucks, and an assortment of cars, all of which looked as if they had been commandeered by aliens. The nearest vehicle was filled with Vrm, one of whom was missing an arm.

"Faster, faster," Sam screamed, having no desire to become a pancake under an Addlemon hoof. Neither did he relish the idea of being eviscerated by the Vrm's claws. "Faster, damn it!"

Ahead of them was the normal backup for the bridge across the river. "Take the car pool lane," Sam screamed. That was one way to avoid the stalled traffic.

No sooner had the cab entered the lane than he heard a siren as a police car entered the pursuit across the bridge and into the city. "*Señor*, this is bad. Now I get a ticket." Sam couldn't sympathize; a ticket was the least of their problems.

The taxi roared along the interstate, dodging cars with such skill that Sam decided the better part of valor was to stop screaming in terror and huddle on the floorboards. He prayed the driver would survive the inevitable crash.

"*¡Madre de Dios!*" the driver yelled when the car tilted up on two wheels and then slammed back to the roadway as it skewed to avoid a slower car in the passing lane.

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Sam risked a glance out the rear window and saw a huge eye staring back at him. Unbelievably, the Addlemon had caught up with them. Their huge bodies pressed in on all sides.

Using their massive bodies, the herd of Addlemon gradually brought the taxi to a halt. Sam tried to imitate a floor mat, but his disguise was revealed when the Vrm ripped the top off the cab and one of the Addlemon extracted him with its tentacles.

Sam wondered about his life insurance policy as he dangled above the decapitated taxi and stared into the fearsome red eyes of his probable executioner. He hoped the end would come quickly. He hated drawn-out farewells.

But nothing happened.

Sam was gently placed on the ground as a surrounding crowd of aliens swelled beyond counting. Sam could hear the sirens of police cars as they finally caught up with events. Were they going to arrive as rescuers or only to witness whatever torture the alien collective was going to administer?

"Shammm," he heard Mardnnn's voice. "Wunnerful show. Great finish."

Sam couldn't believe his ears. Was Mardnnn actually congratulating him for the debacle? There had to be some mistake.

"No court, no court," Cxott slobbered pitifully.

"Vrm will not contest judgement." Sfilth hissed. Their words were echoed by so many alien voices—most of which Sam couldn't understand—that he thought perhaps he had gone completely insane from fear and was now babbling incoherently in some padded room.

Gradually, as Mardnnn explained, Sam realized that his threat of invoking the Hegemonic Courts, whose costs would have ruined both races, had made the two races realize the foolishness of their positions. Better to suffer their differences than risk extermination by the Court's tax collectors.

"Zo, iss end of conflict. Very good solution. Thank you, Shamm."

The airport was packed with passengers, some happy, most not. Over to the side, Sam saw the remaining hundred or so passengers waiting to board the returning flight to Paris on the two-thousand-seat flying wedge. The waiting men were scruffy, unshaven and wearing wrinkled clothing. The women—well, the less said of their appearance, the better. All appeared to have slept in their clothing. At the head of the line were the flight attendants waving their cattle prods to keep the unruly in check. Mercifully, the actual flight would only take a tenth of the time it would take to debark the huge crowd.

At that moment someone grabbed Sam by the elbow. "Sam Boone," a hearty voice boomed. "Glad to run into you."

Sam turned and looked into the beady eyes of the mafioso. Chills ran up his spine at what the man might do, even in this crowd. Would it be a quick knife to the gut, a silenced gunshot, or would the man simply escort him outside to a waiting car full of hired hit men?

"I can't tell you how pleased the syndicate was with your performance the other night. What a great move to lead all of the races out and through the city in a victory parade." That was not exactly how Sam remembered it, but he wasn't inclined to argue. "Anyhow, we'd like to show our appreciation."

"I'd like to stay on this side of the law," Sam replied even as he wondered what sort of reward the gangster would offer him.

"Rest assured that it will all be legal. The syndicate is made up of two tax attorneys, a dentist, a surgeon, four gynecologists, and a proctologist. I think you will understand our need to be above board on everything."

"You're not a criminal?" Sam asked unnecessarily. "You're not mafia?"

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"Mafia? God no! I'm just a CPA. Name's Bach. George Bach. But look, I've got to rush—tax season, you know. We're sending you a check for a couple of thousand next week. Enjoy yourself."

Sam chuckled at his baseless fears as he strode to the gate where his plane would be waiting. The paltry sum the syndicate was sending him was hardly worth considering in light of his vast wealth. With the ungodly billions from Mardnnn's bonus he could afford this trip to the islands. Hell, he could probably afford an island all his own! Blissful thoughts of exotic nights and tawny young women wafted through his mind. At this moment twenty-five billion glizinta were headed for his bank account where they would finance a wonderful vacation, far from the Addlemon, Vrm, and assorted professional wrestlers.

"Why are you smiling so?" Brill asked as he/she bounced alongside. It was nice of Mardnnn's son/daughter to accompany him, but totally unnecessary.

"I was thinking about that fat bonus," Sam replied. "I can really enjoy myself with that much money in the bank."

Brill hummed. "I don't know why that should make you happy, Sam. They're only worth about two hundred and thirty-five Earth dollars."

Sam stopped short. "What? Twenty-five billion glizinta are worth just two hundred and thirty-five bucks? How the devil can there be such a bad exchange rate?"

Brill scratched his head with his/her single tentacle. "I wasn't talking about its monetary value, Sam; that's a lot less. I was just guessing what the metal from that many coins might get on the open market."

"Oh." Thoughts of moon-drenched beaches and nubile females shifted to a dip in the hotel pool and maybe a couple of drinks. It was a hell of a letdown. Now the check from the syndicate looked a lot better. With that coming, he'd still manage to enjoy being away for a while.

As they approached the gate, something began to dawn on Sam. There were few human passengers in his waiting area—very few. Instead the area was filled with . . .

"Greetings, Sam," hissed Sfilth. He was wearing a Hawaiian shirt. ■

(EDITOR'S NOTE: Sam and his charges have previously wrought havoc in "Sam Boone and the Teacup Conundrum" [September 1998], "Sam Boone's Rational Choices" [March 1997], "Sam Boone's Dry Run" [July/August 1997], and more.

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THE ALTERNATE VIEW Jeffery D. Kooistra

LESSONS OF 9/11/01

I was at work that morning of September 11, 2001. My coworker Darlene walked in and said, "Well, I guess you're not safe anywhere—someone just flew an airplane into the World Trade Center." During those last few innocent moments, that time between the first crash and the second, it was possible to think that this was just an accident. A terrible accident, of course, but not a deliberate terrorist act.

But I never thought it was an accident. I had been expecting a terrorist attack to take this form, for "they" had tried to take out the World Trade Center once before, and a large aircraft is such an obvious kinetic kill weapon. Indeed, I had almost written such a story, about terrorists who hijack a 747 with the intent of crashing it into Manhattan.

Then came word that the remaining tower had been hit by another plane. Now there could be no doubt—terrorism had come to our shores in a big way [Note: For the purposes of this column, by "our" and "we" I mean the citizens of the USA.] And the terrorists had beaten my fictional idea—it had never occurred to me that they might hijack two, let alone four, planes.

I heard that the towers were burning. Friends told me I should at least go down the hall to the TV and see it for myself. I did. I was glad to see the towers were still standing—I hoped they would stay that way.

Later, my buddy Richard told me that the first tower had collapsed. We knew that the second one would go soon. I didn't want to go watch that—I'd seen the *Challenger* blow up in real time. That was enough to teach me that I prefer to see tragedies on tape delay.

As you all know, there was still more that morning. The Pentagon had been hit, too. A plane crashed in Pennsylvania. Later we would find out that this crash of UAL 93 was the result of heroes taking it into their own hands to foil the plans of the hijackers. That resonated in my soul. My unwritten story was to have the terrorists fail because one person aboard would not only figure out their plan, but take it into his own hands to stop it.

On the 12th, while driving home, I noticed that the Stars and Stripes were flying everywhere. That evening I took my kids to grandma's house to retrieve the flag that had draped my father's (a veteran of World War II) coffin. I had not unfolded it once in the twelve years since his funeral, but that night it flew at my home.

Which brings me to now.

It is October and this column is due. I haven't felt like writing much of anything since the WTC atrocity. The bombing in Afghanistan is continuing. Anthrax has been popping up in a few places around the country. We're all wondering, "What next?"

I don't know what the terrorists still have up their sleeves, but we all need to get smart in a hurry. There are lessons to be learned, lessons not to be learned, and lessons to be unlearned, too.

One lesson most definitely *not to be learned* is that somehow the attack on the World Trade Center serves as an argument against ballistic missile defense,

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since such a system would not have helped against hijacked planes.

It has been in my mind for many months that I should sometime write about ballistic missile defense. I've supported the idea for my entire adult life. But I felt little sense of urgency. September 11 changed all that. What I needed was the equivalent of a kick in the teeth to take the matter seriously. The knocking out of the shiny white incisors of the Manhattan skyline served.

The fallacy of the "lesson" is easy enough to see. Consider the logic of it: Since defense (A) against known threat (A') would have been useless against surprise threat (B), we shouldn't have defense (A). Let's apply this logic to something closer to home. Since the storm cellar we could dig to shelter us from a tornado won't stop the house from burning down, we shouldn't dig the storm cellar.

Another objection raised against missile defense (and by my home state Senator Carl Levin, who has no excuse for not knowing better) is this: A missile from a "rogue state" is tantamount to the supplying of a return address. This is true if the missile is actually launched from said rogue state. The problem is, and I'm watching this unfold nightly on TV, that the sophisticated terrorist network long ago gave up occupying a single country. Had history been arranged just a bit differently, Osama bin Laden might instead have gotten his hands on a mobile nuclear-tipped missile. Such a missile could be launched from anywhere, even from a large ship hundreds of miles offshore. The terrorists don't need to worry too much about accuracy—they succeed if they just manage to hit something on land. (Few places exist along the Boston to Washington corridor that wouldn't be an acceptable target.) Then what would we do to catch them? Against whom would we retaliate? (I should also point out that the supplying of a "return address" by suicidal terrorists isn't going to be high on their list of things to avoid. They would likely do what bin Laden is doing now—holing up in a country not his own, occupied by a government which doesn't belong there.)

There remains plenty of room for discussion about what sort of missile defense should be built. A great many hardware questions and system architecture issues remain to be settled. But the question of *whether* we should build one *is* settled.

For further study, I recommend you obtain a copy of *The Shield of Faith* by B. Bruce-Briggs (ISBN 0-671-61086-4), the best book I have ever read on the subject of, as the subtitle reads, "strategic defense from zeppelins to star wars." A second choice is Robert Jastrow's *How to Make Nuclear Weapons Obsolete*.

A lesson that must be *unlearned* is that the United States is somehow "exempt" from attacks on her home soil. Sure, it would be hard to find someone who ever said as much, but we sure have been living that way.

In the aftermath of 9/11, the government is intent on "beefing up security" at airports. But have we really even *had* any security to beef up? Anyone who flies a lot knows what jokes the baggage checks and metal detectors were prior to September 11. We don't need to "beef up," but to *add* genuine security into our system. That likely means air marshals and armed pilots and interior surveillance of the planes from the cockpit, and cockpit doors that cannot be opened from the outside.

None of these are things we couldn't have done prior to September 11. All are things we now see that we probably should have done, but we just didn't understand what "taking the terrorist threat seriously" really meant in terms of security operations and technology.

We failed to appreciate the actual danger we were in. We failed to take appropriate countermeasures. This has cost us dearly in terms of lives and dollars.

Funny, isn't it? Prior to September 11, increases in the defense budget of a few billion dollars a year for the ballistic missile defense research and development

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program were being resisted. That resistance came against a program designed to address a known and growing threat. No one was even asking for more than a token increase in funds for defenses against threats from terrorist plots, despite congressional testimony earlier in the year specifically warning in no uncertain terms about international terrorism.

But then the towers fell. Thousands of lives were lost. Within days, Congress had approved 40 billion dollars as a *down payment* on the cost of cleaning up and rebuilding Manhattan. Forty billion could have paid for a lot of air marshals, airplane retrofits, anti-hijacker training, any and all of the counterterror measures we're now belatedly putting into effect. It could have purchased a damn good defense against the likeliest of limited ballistic missile threats. It matters little how cheap the weapons are that terrorists or other nations can use against us—what matters is the cost of the damage they can do to us.

And it would have saved those thousands of lives. More than that, we were lucky. Tens of thousands of people could have died in the fall of the two towers. Had the terrorists been able to get a million of us, they would have gleefully done so.

How many dollars are a million lives worth?

And the deaths are not just on our side. Many people will now die who would not have otherwise as our "war on terrorism" progresses. As I write this, US planes have been hammering selected targets in Afghanistan for weeks. Special forces troops have been inserted at key points. The Taliban will die, and so will innocents around them. We will never know exactly how many.

I fully support the war, but I'd really rather our citizens were still living and our towers were still standing.

For further reading on this subject, there is no better place to go than to *On Thermonuclear War* by Herman Kahn. Although the specific subject matter is dated, the *methodology of how to think about the unthinkable* that the book will teach you is invaluable. Most libraries have this book, and I just recently obtained a used copy, in hardcover, for only ten bucks. It's a hefty tome, but there is no royal road to understanding strategic defense matters. With Kahn under your belt, you'll be able to reap the full benefit of other more recent books about terrorism and current strategic threats.

And finally, one lesson to be learned is that, sometimes, nuclear weapons *can and should be used*.

If we are to fight a *real* war against terrorism (and not some kind of in-name-only bullshit war like the "war on drugs"), then it's certain that clearing the Taliban and bin Laden out of Afghanistan will not be enough. Iraq will have to give up Saddam Hussein. Iran and Syria and others will have to change their ways, too, or risk our wrath.

It makes very little sense, then, for us to first tie our hands behind our backs and refuse to "go nuclear" under some misguided no-first-use policy. No, I'm not advocating "Hiroshima-izing" Baghdad or Damascus. It's just that not all nuclear weapons are created equal. A one-kiloton bunker buster should not be compared with a megaton-range city smasher, any more than a propane torch should be compared with a flamethrower. And neutron bombs, despite their bad press, could be very useful for retaking a city without wrecking it first, which is what the bomb's designer intended. In short, the right nuclear weapon for the right job could both save lives and property, and their use should not be prohibited simply because so many of us in the west have decided that using them is "unthinkable."

Indeed, one of Herman Kahn's other books on nuclear strategy is called *Thinking About the Unthinkable*.

The heroes of UAL 93 did what for them was unthinkable before they boarded their flight that morning. In the interest of getting smart fast, the rest of us had better start thinking about it, too. ■

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Probability Zero

Hot Tip

Billy Bruce Winkles

Dr. John Suttle had just sat down to watch the evening news when he heard the phone ring. He immediately got up to answer it, but his five-year-old daughter Annie ran into the room and got to it first.

"Hello," she said, after she picked it up. "What? Yes."

"Let me have it, Sweetie," Dr. Suttle said, gently taking the phone from her hand.

"But Daddy!" she cried.

"Just a minute, Sweetie. Let Daddy talk on the phone. . . . Hello."

"Yes, hello," a male voice said. "Is this Dr. John Suttle? The physicist?"

"Yes."

"Dr. Suttle, please listen," said the caller, who spoke with a strange accent. "My name is Olam Stroy. I'm calling you from the twenty-fifth century, four hundred years in your future."

"What do you mean?"

"Just listen. I'll explain everything."

"Please do," Dr. Suttle said. He thought that the call was probably a prank, but he wanted to keep an open mind about the matter, and so he decided to give the caller a chance to explain.

"But Daddy," Annie said again. She was still standing beside her father, and she had started tugging at his sleeve.

"Please wait, Sweetie," he said. "Go ahead, Mr. Stroy. I'm listening."

"Yes, Dr. Suttle. As I said, I'm calling you from the twenty-fifth century. I am also a physicist. In fact, I'm the leader of a research group that's studying space-time contortion phenomena. Recently we discovered a way to make phone calls into the past."

"How do you do that?"

"Well, I'll try to give you a brief summary. First, we create a miniwormhole tunnel through space-time, constructed to run from our laboratory to the general location and time period that we want to reach. We carefully maneuver the far end of the wormhole to a position near a phone system relay antenna, and then we beam a microwave signal through the wormhole to the antenna. By using the proper codes, we can link up with the commercial phone system and eventually complete the call."

"Well, I understand the basic idea," Dr. Suttle said. "But it must have been difficult to work out all the technical details."

"It was. By the way, this call to you goes farther back in time than any of our previous calls."

"Why did you call me?"

"Because, Dr. Suttle, it was your pioneering research on the elastic properties of space-time that laid the foundation for the work our group is doing now."

"But I just started looking into that subject a few weeks ago. I haven't accomplished anything yet."

"But you will, Dr. Suttle. In fact, you'll eventually make some major discoveries."

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"Daddy! Hurry!" Annie cried, giving another tug on her father's sleeve.

But Dr. Suttle, intrigued by the call, was hardly aware of his daughter's presence. "This is really hard to believe," he said into the phone.

"But it's true, Dr. Suttle."

"Does it mean that I'll become famous?"

"Yes. . . . Well, actually, you won't become famous until later, after you're dead."

"After I'm dead?"

"Yes. Unfortunately the scientific establishment won't recognize the value of your work when it's first published. It'll lie buried in the journals for several centuries."

"So its importance won't be appreciated while I'm alive?"

"No. In fact, it'll be considered so insignificant that you'll eventually lose your research post. Afterward, your bitterness over the matter will cause you to turn to alcohol for solace. Your drinking will become so heavy that you'll finally end up living on the street. You'll spend the last years of your life as a penniless beggar. And you'll finally die in total obscurity."

"Gee."

"Yes. What a shame. But remember that you'll ultimately be vindicated. Eventually your work will be rediscovered, and then its value will finally be fully appreciated."

"Are you sure about all of this?"

"Yes Dr. Suttle, I'm sure. But listen, I've got to run, or I'll be late for a meeting. It was nice talking to you. Bye."

"But . . ."

Dr. Suttle heard a click, and then the line went dead. For a moment he stood quietly, trying to grasp what he had heard. Then suddenly he realized that his daughter was still pulling at his sleeve.

"Daddy!" she cried again.

"Yes, Sweetie," he finally said. "What is it?"

"What did that lady on the phone mean? What's a collect call?" ■

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Most of us just have one option when things get too crowded. The Astral Astronauts have another. . . .

Cabin Fever

Jerry Oltion

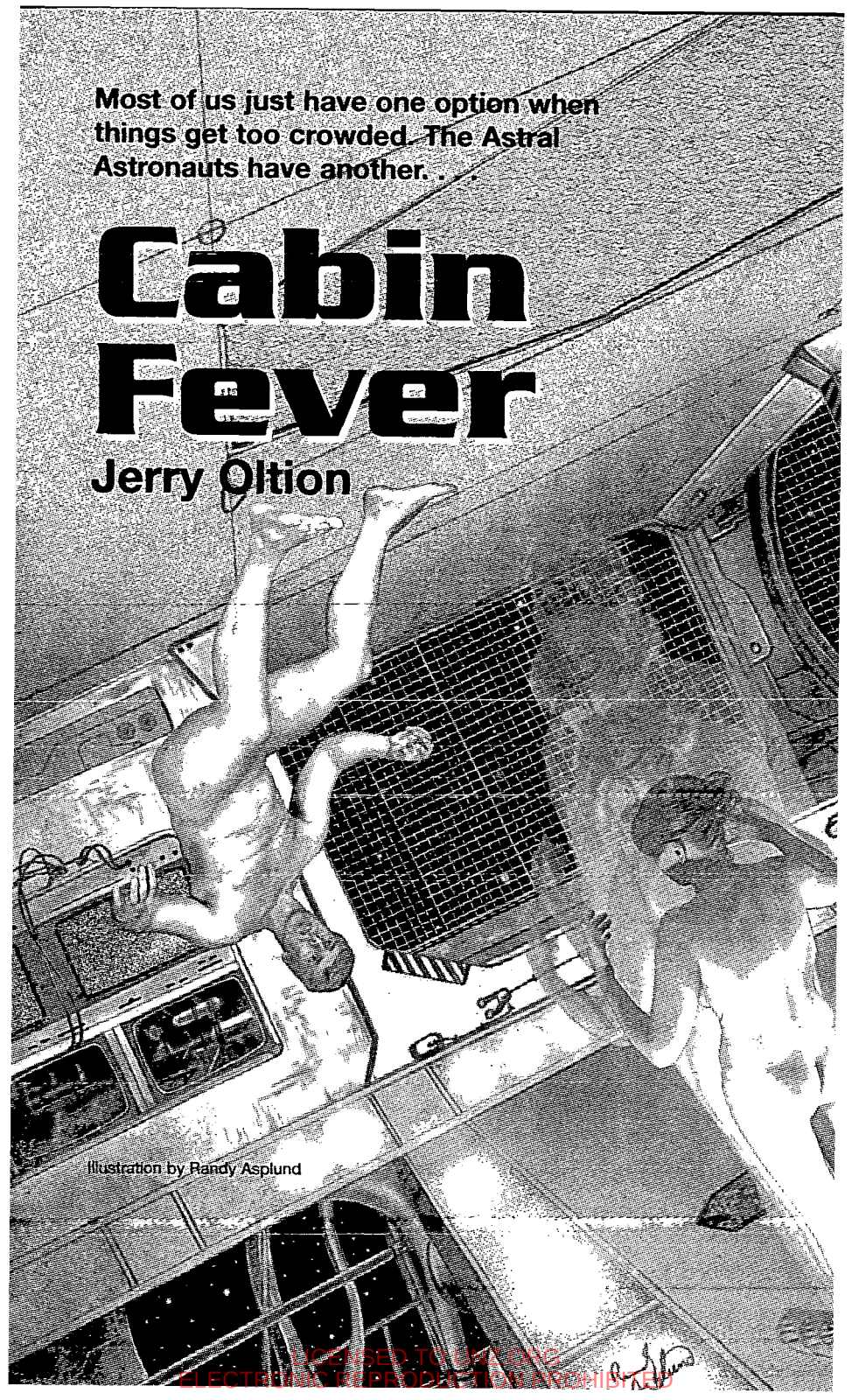

Illustration by Randy Asplund

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Okay, so it was a dumb idea. What can I say; we were in love at the time. We thought we always would be. But two years cooped up together, three couples in a starship no bigger than a mail shuttle, showed us how ephemeral that could be.

We knew we were in trouble the day Liam tried to kill Yavetra. Etinitu had been trying to delete Tilbey at least once a week for the last couple of months, but we all secretly hoped she'd succeed. Kylona and I had discovered that it was actually kind of erotic to describe in detail how we would like to do each other in, so everybody knew we weren't really serious. But Liam and Yavetra had been inseparable since before we'd left Islandia. If they started going after each other's throats, we were in worse shape than we thought.

Tilbey caught Liam in the act, which was appropriate since Liam had caught Tilbey and Yavetra in the act earlier in the day, which was why he was trying to kill her now. Different acts, of course, but maybe not that different in the long run. Both involved destroying something precious to Liam.

"Oh, great; another meeting," Kylona said disgustedly when she heard what had happened. We'd been holding group discussions more and more often lately, trying to talk out our problems before they overwhelmed us.

Talking didn't do much good, but it was either a meeting or a duel, and with our ship light-years from home we didn't need any broken equipment. So we all gathered in front of the multimedia console in the "day room"—the only place on board the *Spook* big enough for all six of us at once—and prepared for another round of acrimony and tears.

It would have been quite a scene to a passing alien, if there had been any out there at the time. Six milky-white ghosts drifting weightless inside our coasting starship, its walls wide open to space, with only nets strung between ribs and spars to keep our belongings from drifting away. We moved our lips to speak, but of course we made no sound in the vacuum.

When Tilbey and I and Liam had first shed our bodies to become interstellar astronauts, we had required hardware implants in our throats and jaws to interpret our motions and translate them into speech, but on the long trip to Alpha Centauri, Tilbey had played around with the programming of our mass eliminators and devised a way to detect the simulated muscle impulses at their source. That eliminated the need for implants but not for the motions, so we jabbered away at each other like characters in a silent movie while the computer provided sound in our simulated eardrums.

We might as well have said nothing for the first half hour. Accusations and recriminations were all we uttered, and we didn't even make up any interesting new ones.

Finally Kylona said, "Hey, this is getting us nowhere. We've got to figure out how to get along for the rest of the trip or we're all going to wind up dead."

"One of us won't," Liam said gruffly.

She gave him a pitying look. "Do you really think any of us—even you—could survive the next three years alone in this ship? After knowing you had murdered the rest of us? How long would it take before your guilty conscience drove you crazy?"

"You mean crazier than I am now?" He held out his hands. "Look, babe, I'm already seeing ghosts, and frankly, you don't scare me."

"Maybe I would if I took a little stroll through your mass eliminator."

The magnetically enhanced standing wave that made up her body would fry the electronics in his ghost generator the moment she slipped inside it. Of course she would have to get through two layers of safety precautions before she could reach it, but that would only slow her down. She had been studying electronics and mechanics during her time on board; she was almost as good

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as Tilbey at tinkering.

Liam laughed. "If I didn't know you better, I'd think you were making a pass at me. Save your death threats for your boyfriend, Kylona. I've got troubles enough without adding yours to the mix."

They stared at each other with a mixture of hatred and lust that only people who have shared the same living space for two years can produce. I was starting to worry, considering what Kylona found erotic these days, but Etinitu defused the situation by saying, "Hey, come on. The problem is really about space, not life or death."

Liam looked past me to her. "The problem is five other people who don't have the self-discipline for an interstellar journey."

She rolled her eyes. "Who needs self-discipline with you telling us all what to do all the time?"

He opened his mouth to argue, but I cut him off. "Look, we're all driving each other nuts, and Etinitu is right: it's because we're all living in each other's pockets. We need to get away from each other for a while."

Kylona said, "I thought that was what we were trying to accomplish when we made separate staterooms for everybody."

"We were," I agreed, "but the staterooms are too small to stay in for long."

"So let's make them bigger."

Tilbey shook his head. "This is a starship, not an apartment building. We've pared its mass down so much already that it's as fragile as glass. If we start moving struts, it'll collapse like a house of cards the first time we use the thrusters to dodge a rock."

"How many rocks have we had to dodge since we left home?" she asked him.

"None," he answered, "but the radar has found a big one a couple months ahead of us that we're only going to miss by a million kilometers. Who knows what kind of debris is floating around it?"

"Hmm," she said. "Well, then, how about if we start living on the outside of the ship? There's lots of space out there."

"That's a great idea," Liam said. "You guys all go on outside, and I'll stay here with the book readers and video players and the—"

"I meant we could move that stuff outside and—"

"And let it drift off to Aldebaran the moment the ship makes a course correction."

She glared at him. "We could tie it down."

"You were perhaps planning to lock Tilbey up first?" He didn't need to say more. No matter how much Liam bugged him about it—perhaps *because* Liam bugged him so much about it—Tilbey seemed to sow disaster wherever he went. The moment he got distracted, he would leave whatever he was doing parked in free fall, completely forgetting it until he needed it again, whereupon he would spend half the day hunting for it among the hundreds of other things he'd left adrift in the meantime.

Tilbey knew enough to keep quiet. The rest of us floated there in silence as well, glaring at one another and waiting for the next bright idea to shoot down.

I tried to think of one, just to be sporting, and nobody was more surprised than me when I actually came up with something. "If we can't make the *Spook* bigger," I said, just thinking aloud more than actually suggesting anything, "How about if we make the individual spooks on board smaller instead?"

Liam looked at me like I was a moron, but he didn't bother to say so. Kylona cocked her head sideways, as if to decide if she'd heard me correctly. Yavetra narrowed her eyebrows, and Etinitu frowned. But it was a thoughtful frown.

We all looked at Tilbey.

"What?" he said, jerking alert when he realized he was the focus of attention.

"Can we do that?" I asked. Despite his

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clumsiness, he was still our resident genius, though Kylona was catching up fast.

"Do what?" Tilbey asked.

"Make ourselves smaller."

Now *be* frowned. Rubbing his chin, he said, "I don't . . . well, maybe if I . . . I'd have to recalibrate the—"

"Can you do it?" Liam demanded.

"We can do it," Kylona said.

I looked over at her, still amazed at her transformation even though I had watched it in action. She had been a naked tropical island native just two years ago, but she'd taken to technology like a teenager to credit.

"How small?" I asked her.

"How small do you want? Theoretically we could go clear down to the molecular level, but we'd start having trouble with quantum shifts in the information stream at that scale."

I had been thinking mouse size, but I suddenly realized I was being too conservative. "We could actually get down to microbe size? Like bacteria? Viruses?"

Tilbey found his voice. "Bacteria, yes. Viruses would be getting into the gray area. Your eyes would be too small to pick up light, for one thing."

"Bacterial size would be small enough." I tried to remember how many bacteria could fit onto the head of a pin. A thousand? More? The *Spook* was two hundred and fifty feet long and forty feet wide; if we were the size of bacteria, it would be big enough to keep us from bumping elbows no matter how long we stayed on board.

Six ghosts looked at one another across the day room. Then, as one, we all shouted, "Let's do it!"

It took Tilbey and Kylona a week to alter our mass eliminators to allow us to shrink and grow at will. As with the coupling constant that governed our interaction with matter, we couldn't get infinite power out of it, so we couldn't stride across the cosmos in light-year sized leaps, but we could shrink as far as we wanted to go.

At last we were ready. We gathered again in the day room while Tilbey told us how to control our new ability.

"The computer will respond to verbal commands," he said. "It'll try to keep you from doing anything stupid, but I'm sure we haven't been able to think of everything, so be careful what you tell it to do."

Liam snorted, but Tilbey ignored him and went on. "Your feet will always be the reference point for body placement. That way you won't wind up hanging three feet away from the floor when you shrink."

"But watch your head when you expand again," Kylona added. "If you're underneath something, you're going to bang into it."

Tilbey nodded absently. "We'll still be able to hear each other if we want to, or we can scale down our hearing range to give us privacy. Even then, if you shout someone's name the computer will connect you, so don't worry about losing track of each other."

"How do I shut it off completely?" Liam asked.

"You don't. That would be stupid. In an emergency, the computer needs to be able to page you." Tilbey turned toward Kylona without waiting for a reply. "You want to demonstrate how it works?"

"Sure." She pushed herself up to the ceiling, reoriented herself so her feet touched the surface, and said, "Command, body scale one one-thousandth."

I had expected her to wink out like a burst soap bubble, but instead she shrank over a period of a couple of seconds. Apparently her mass eliminator couldn't compensate instantly for the scale change. It didn't matter, really, but it was kind of alarming to watch. It looked as if the ship had sucked her into it.

"Are you OK?" I asked. I could see a tiny white speck on the ceiling that I assumed was her.

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"Fine," she said. Her voice was just as strong as ever. "Go ahead and try it."

"All right." I pushed myself backward until I was against one of the few solid spaces in the wall—an access panel for the wiring conduits—then echoed her command.

Everything else in the room flew away from me like shrapnel from an explosion. "Whoa!" I said.

"What's the matter?"

I laughed. "Nothing. I just wasn't ready for the light show." I looked around me. Deep grooves lined the metal. It had been silver before, not quite mirror-finished, but it was gray now and pitted with holes and bumps. Were those actual molecules? I bent down to look closer and decided they weren't. They still had rough edges. I'd have to go ten, maybe even a hundred times smaller to see individual molecules.

The ceiling looked like it was about five miles away. The view reminded me of *Freeport*, the UN's orbital space station back home. Except four giants filled the space where the hang gliders would have been.

That didn't last long. One by one, Liam, Tilbey, Yavetra, and Etinitu each chose their territory and shrank to invisibility. "Everyone okay?" Tilbey asked when the "oohs" and "aahs" had subsided.

He got a flurry of affirmatives, then Liam's voice said, "Command, reduce hearing sensitivity to minimum."

"'Bye!" I told him, but he didn't respond. Maybe he was already out of touch. "Well," I said to the others, suddenly reluctant to cut my last link with them, "give me a call if you get bored."

"Yeah, right," said Tilbey. Yavetra and Etinitu giggled. Kylona said, "Be careful, Danny."

"You too," I told her. And then I said "I love you," because now that we were effectively farther apart than we had been in years, I realized I still did.

"I love you too," she said, "but do us both a favor and don't call me for a while, okay?"

"I wasn't planning on it," I said, wounded.

Tilbey laughed, then gave the command to isolate himself. I did the same a moment later, then I looked around at my surroundings to see where I wanted to go first.

It really didn't matter. I could reach any place I wanted in a few seconds merely by expanding, moving over a few feet, and shrinking again. But the whole point of shrinking was to gain more personal space, so I decided to just stretch my legs a little, figuratively speaking, and explore my new domain.

It turned out to be a literal leg-stretcher. When I pushed myself gently away from the wall, kicking off one of the ridges of metal and planning to just drift along for a while, I was surprised to feel a tug on my feet before they came loose. I coasted for a few body lengths, but within a few seconds I found myself falling slowly back to the "ground." I got my feet under me before I hit and felt them slap the surface. It felt a little like I was wearing magnetic boots.

I took a few experimental steps. Sure enough, my feet stuck. Not much, but enough to notice. I bent down and tried my hands; same thing.

Molecular adhesion? Adsorption? I couldn't remember the right name, but I did remember that I'd heard about the effect back in my college days. It was the reason why spinning fan blades could still gather dust, and why evacuated vessels could still hold air molecules. You actually had to go in and sweep them out if you wanted a pure vacuum.

The effect was just enough to keep me from floating, but not enough to let me walk, so I reduced my scale a little and tried it again. Now the pits in the metal were like Lunar craters, and the scrapes like ditches, but I could walk almost normally around and over them.

I thought about calling the others and telling them what I'd discovered, but I decided to let them figure it out on their

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own. I think that decision marked the point at which I truly started to relax. I could just let the others be. Amazing.

So I walked. Every now and then I would encounter a boulder. Dust grains, I assumed. I kicked a few of them loose, pitching them off into the void like a kid tossing rocks off a cliff, but I stopped when one made a U-turn and nearly whacked me on the head. We must have had opposite electrical charges or something. I didn't know, but it was clear that things didn't work the same as I expected them to on this scale.

Then I saw the forested knoll. It looked so incongruous out there on the metal plain that it took me a while to accept what I was seeing, but it was still there after I blinked and rubbed my eyes so I walked toward it, watching it loom up out of the distance like an island rising up to meet an approaching boat. It looked so much like a tropical island, complete with palm trees, that I seriously doubted my sanity, but when I got closer I realized what it was.

Fungus is one of the biggest problems on board a spaceship. You've got to have enough humidity in the air to keep the crew healthy, but no matter how good your circulation system, there's bound to be condensation somewhere. And wherever you get condensation, you get mildew.

The *Spook* hadn't been exposed to moisture—heck, it hadn't even held air—for years, but it had a long life as a cargo ship before we converted it into an interstellar explorer. And no matter how fastidious the crew, they couldn't keep gunk from growing on the walls.

We hadn't bothered to clean it before we'd gutted the life-support system. We were already dead by then; what did we care? But now I realized I cared a great deal. I ran the last few millimeters to the mound, tested my footing on its knobby surface, and climbed up between the spore stalks to the top, feeling more at home than I had since Islandia. In all this sterile hardware, I'd found an oasis.

Up close there was no mistaking the hyphae for palm trees, but I didn't care. They were tall and biological, which was good enough for a guy who hadn't seen so much as a blade of grass in two years. I plopped down on the "ground" at the base of one of them, folded my hands behind my head, and leaned back against the trunk.

From the hilltop I could see all the way to the edge of the bulkhead in all directions. There wasn't a horizon; just a vanishing point where things on my current scale became too distant to resolve anymore. Normal-sized objects were still as clear as a bell, though. The latch to the access panel I was on towered upward in the distance, and beyond that a porthole stared at me like the eye of God.

From up here I could also see half a dozen more clumps of mold, and a pile of debris that dwarfed even them. I couldn't tell what it was from here; maybe a piece of lint or a full-blown dust bunny. I might go investigate later, but for now I was content to sit under a tree and let my mind wander. Now that I had a little distance from the others, it was time to explore the space inside my head as well as the space outside it.

This was a nice respite, but I wondered if we'd actually solved our problem. Living apart might keep us from killing each other, but it wouldn't repair the damage we had already done. No matter how much time or distance we put between us, we had attempted to murder each other. It would be hard to forget that. Every time we argued from now on, we would wonder if it would blow up into another attempt on our lives.

I didn't know what to do about that. Maybe nothing. Attempts to fix interpersonal relationships are sometimes more disastrous than leaving them alone. I thought about our options, but in the end I decided to just wait a while and see how things went.

As a ghost I didn't have to worry

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about finding food. I still liked to sleep, though. I took a long, satisfying nap there on my desert island, woke up delighted to realize that my dream was real, and celebrated by taking another nap. When I'd had enough of that, I explored some more, finding topological delights in such things as woven tie-down straps and nonskid grating.

The days blended together. Once, the ship lurched beneath my feet, sending me tumbling head over heels before I caught hold of a barrel-sized metal filing sticking up from a rivet. "Computer, what just happened?" I asked, and its calm voice replied, "The collision avoidance system has diverted us around an oncoming obstacle."

"Oh." So there were rocks out there after all. "Are we clear?"

"Yes."

I dusted myself off and considered calling the others to make sure they were okay, but I realized I didn't have to do that. "Computer, is everyone else all right?" I asked.

"All six crewmembers are unharmed," it replied.

So I continued on my way. In a storage net, I found a sealed bottle that still had a whiff of air in it, and when I lowered my coupling constant and squeezed inside I discovered that the thermal motion of the air molecules gave me a pretty good massage. Later I found a piece of fiberglass and a piece of lint and learned that if you straddled the glass rod and rubbed it with the lint, you could build up a static charge, and then if you pushed dust particles down toward the end of the glass rod, they'd fly off into space and the reaction would kick you the other way. It made a crude but effective rocket.

I was crossing the space between the aft bulkhead and the workbench when I saw motion out of the corner of my eye. It was something big. I turned my head, expecting to see one of my shipmates grown tired of playing microbe, and I did see something vaguely man-shaped floating in the open space where the airlock used to be, but I couldn't make the image resolve into anything familiar. It looked like whoever it was was covered in cellophane.

Had Tilbey gotten tangled up in a plastic bag or something? But the bag wouldn't expand with him unless he'd set his coupling constant all the way to maximum.

Then I realized whoever it was had eight limbs.

"Holy shit," I whispered. Did we have a spider on board? The hair on the back of my neck stood straight out. How could a spider have survived this long without air or food? It looked like it had wrapped itself in a cocoon, but I couldn't see how that would help.

It was definitely alive, though. Its limbs waved back and forth, and it used one of them to push itself further into the ship. Right toward me.

"C-c-command, body scale normal!" I yelled.

I forgot that everything in the room would look like it was rushing toward me when I got larger. I threw out my hands to ward off what seemed to be an impending implosion . . .

. . . and scared the daylights out of the alien who had just come in through the open frame of the airlock.

We were even. I screamed louder than I had when I'd died.

I had misjudged the scale. This wasn't a garden spider; it was about half as tall as me, with a head like an artichoke on a barrel-shaped torso and eight arms sticking out from the sides. The moment it saw me, the petals on its head stuck straight out, filling its spacesuit helmet like a puffer fish that forgets it's in a goldfish bowl. It fired what I first thought was a weapon in its lower left hand, but when the reaction drove the creature backward, I realized it was a jet pistol for maneuvering in space.

"What's the matter?" Kylona asked, and a moment later I heard four other voices ask the same thing. My scream

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must have triggered the computer's emergency call to everyone.

"Visitors!" I shouted. "We've got visitors!" I cursed myself for not thinking to tell the damned computer to warn us about approaching ships, but who would have thought there would be any in the cold, thin darkness between stars? All we'd told the computer to do was avoid obstacles, and once the alien matched courses for docking, it would no longer be considered an obstacle.

The alien shook its head. Whatever it had done to itself looked to have been painful. But it did it again a moment later when Liam sprang to full size across the room.

Yavetra popped down from above, and Etinitu right beside her. They had apparently been exploring the ceiling together.

The individual stalks that made up the alien's head writhed like snakes, then slowly started to settle down. I held out my hands, palms out, and said, "It's all right. It's not really what it looks like."

"Yeah, right, we're not *really* ghosts," Liam said sarcastically. "Whoops, I was wrong, we are."

It didn't matter what we said, of course, since the alien couldn't hear us and we couldn't hear it, but I turned to Liam and said "Shut up" anyway. Then I turned back to the alien and gestured for it to come forward again. The thought occurred to me that it might be hostile, but I was so starved for outside contact that I think I would have welcomed an invasion force if they would just talk to me in the process.

The alien didn't look hostile anyway. It reached behind itself for the cargo net we had strung across the doorless airlock, all eight hands scrabbling madly to find the opening it had let itself in through.

"Computer, can you detect any transmissions from this guy?" I asked.

"Affirmative. Extremely high frequency, amplitude modulated."

"Link us up."

"Linked."

"It's OK, buddy," I said softly, knowing it couldn't understand me, but hoping that my tone of voice would tell it I was friendly. "Welcome aboard. Excuse the reception, but we weren't expecting visitors."

Its voice was a warbling moan. I didn't need to know its language to know it was terrified.

Yavetra kicked off gently and did a slow tumble to land on her feet on the floor. The creature's moans changed pitch. They died down a little when she reached up to help Etinitu down. That apparently wasn't the sort of behavior it expected from a ghost.

Then Tilbey blossomed to full size underneath the multimedia console. Books went flying, their screens flickering like strobes as they hit the walls and ceiling. The whole cabinet ripped loose and crashed against the wall next to the airlock. And where it had been, now stood a milky white Tilbey, gripping his head and shouting, "Ow owwwww oooowwww ow!"

The alien ripped a new hole in the cargo net and flung itself outside. I stuck my head out after it just in time to see it fire its reaction pistol and arc around the flank of the *Spook* to where its own ship waited, engines hot.

"Don't go!" Yavetra shouted, but the moment the alien reached its airlock, the ship shivered like a dog shaking water off its coat and disappeared in a brilliant streak of light.

"Shit," I said. "The first new face to talk to in years and we scare him off."

Liam said nothing. He just advanced on Tilbey, grabbed him around the neck with both hands, and squeezed.

"Hey!" Tilbey shouted. "Cut it out. Hey, that hurts." He kept on hollering long after Liam had crushed his throat. The computer that picked up his speech didn't care. Finally he said, "Command, body scale one ten-thousandth," and vanished back into the floor.

Liam stomped on the spot where he'd

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been, but that only sent Liam careening up to the ceiling.

"Hah, missed me," Tilbey said.

Liam bounced all around the room, ransacking it for a weapon. We had pistols in the lander, but they wouldn't hurt a ghost, and they wouldn't have satisfied his bloodlust anyway. He flexed his hands a few times, then pushed himself over to the spot where Tilbey had disappeared. "Command, body scale one nine thousand, nine hundred and ninety-ninth," he growled, and a moment later he vanished.

"I'm coming for you, Tilbey," he said. He'd just shown that he couldn't kill one of us with his bare hands, but that wasn't going to stop him from trying.

I looked out at the stars again, stars that seemed even farther away now than they had before. There was no catching our visitor; that ship had accelerated at hundreds of gees, and the best we could do was fifty. Unless he came back, we still had three years of travel time ahead of us, and now our onboard animosity had spread to a new dimension.

Kylona came in through the hatch leading to the cargo hold. She had evidently been doing her exploration back there. "Sounds like I missed all the fun," she said gloomily.

I turned to face her. She and Yavetra and Etinitu were floating amid the wreckage of the entertainment center, their dismay written all over their faces. What could I do to cheer them up? For that matter, what could I do to cheer *me* up?

On a long voyage, you learn to make do with what's available. "On the contrary," I said, taking a micromagnifier from the workbench and bending down to see if I could spot Liam and Tilbey. "It looks like the fun is just beginning." ■

(EDITOR'S NOTE: Previous stories of the Astral Astronauts include "The Menace From Earth" [October 1999], "Kissing Cousins" [November 1998], "Why Didn't You Think of That Before We Left?" [March 1998], "Cease and Deceased" [October 1997], "Holiday Spirits" [January 1997], "The Spectral Stardrive" [November 1996], and "Unfinished Business [October 1996].)

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FIRST IMPRESSIONS

Shane Tourtellotte

Sometimes one must choose between sticking purely to high ideals, and getting things done.

"You want to do *what* to my brain?"

Lucinda Peale jumped, even with the thick transparent shield between them, and the guards on each side. She turned back to the prisoner, trying to show no fear. A ghostly reflection of herself, pale and anxious, looking the other side of forty, fell across the black face glaring back.

"The therapy involves sending finely aimed electrical impulses into the brain, primarily the limbic—" She changed course, not wanting to confuse him. "—primarily deep inside, to areas controlling emotion, violence, antisocial behavior. The goal is to alter the neurochemistry, strengthen the inhibitory—" She stopped again, unsure how to reword things.

"Electricity?" the prisoner barked, a couple of beats behind. "You wanna give me shock therapy? You gonna treat me like a mental case?"

"No, no. Electroshock was crude, dreadfully crude. My team—I said my team and—"

Her faltering attempts to regain control of the meeting melted under a storm of loud, obscene language. The guard appeared by the prisoner's side, grasping the chain that linked the manacles at wrists and ankles. The prisoner wrenched free for an instant, throwing his fists against the partition before being yanked back.

Lucinda pushed her chair back with a jolt, fetching up against the leg of her own guard. She stammered an apology, waving away his offered hand to stand up herself. She had weathered such storms a dozen times now, but they never became easier.

"If you want to try again," the guard said once the other side of the room was empty, "I can take you to the warden to arrange a time."

"No. That's all right." What had become easier was recognizing futility. She had suffered it often enough.

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The California Department of Corrections had given her a list of twenty-two prisoners she could approach for the project. That roster had yielded exactly one volunteer.

There was only one thing to do: ask for more candidates. That would involve going beyond Corrections.

The Assembly had recessed a few days before, but Lorenzo Gallegos was there in the atrium of the state capitol building to greet her. The creases in his dark mestizo face placed him in his fifties, while the gloss in his heavy mustache hinted at dyeing. He escorted her through the sharply echoing hallways to his door, his name and title of Assembly Speaker etched in silver on a mahogany plaque.

Gallegos sat at his broad desk, and fanned several notecards before him. He rubbed his jawline with a thick finger as he scanned them. "Now, Doctor Peale, you want us to authorize the Corrections Department to give your study wider access to our prison population. Why isn't the access you received last session enough?"

"Because the restrictions placed upon us by the first bill narrowed our candidates to the most violent and antisocial inmates, those considered beyond conventional rehabilitation."

"Your research is about rehabilitating just those people," Gallegos said. "We gave you who you wanted."

"But those same attributes make them the people least likely to participate willingly. We were asking for volunteers from a group predisposed against volunteering. That's an obvious formula for failure."

Gallegos laid one hand atop another. "I don't see how that is more our concern than yours, Doctor."

"You passed the bill. You voted for it yourself."

He glanced at a card. "Yes, ahem, as part of an omnibus measure."

"Well, it's time this matter received more exclusive attention. This therapy has the potential to make violent, recidivist criminals mild-mannered and law-abiding. It can rehabilitate thousands, relieve overcrowding in your prisons, return people to productive society. To smother it with neglect masquerading as restrained support would be a travesty." Lucinda sensed a defensive stiffening, and moderated her tone. "It would make the original measure a failure, and I don't see how that serves you, or anyone, well."

Gallegos nodded. "What would you have us do? Widen your volunteer pool, or give you the worst cases whether they want to participate or not?"

"Widen the pool," she said. "Drafting participants at this stage would be highly unethical. The original legislation acted properly there," she added as a sop.

He looked over his cards for a moment, scratching his chin. "What about your other volunteers? The ones providing the, ah, improved patterns. Will you need more of those?"

Lucinda shook her head. "Our volunteers from the university will be enough. We'll pick the neural architecture most physically similar to each subject's to perform the overlay, in the relevant areas."

"Only from your university? That's a narrow sample for such intricate work."

"We have plenty of scans on file. Bringing in people from outside would produce heavy paperwork. That eats up time and money—and we are trying to economize with the state's money."

Gallegos smirked. "You certainly haven't gotten much value for it yet."

"With all respect, sir, that's not our fault. The authorization we got didn't match our need, not through malice but through lack of foresight. We can proceed with our single volunteer, but one man will scarcely prove or disprove the methodology. We deserve a proper trial. Society deserves the chance to have its penal system live up to its ideals."

He asked other, increasingly vapid,

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questions, all the while watching her through heavy eyelids. She gauged his attitude not as apathy but as aloofness, unwillingness to commit himself to something not affecting his interests directly. She made careful answers, taking pains not to nettle him.

They could succeed without him. It would just take more work.

Lucinda wrote the project summary at home. It would accompany her team's formal request to members of the Assembly. Pavel, with his uncanny weather sense for politics—all kinds from office to international—had told her not to bother with the State Senate. They would follow the Assembly's lead.

She tried not to soften the science too insultingly, but felt compelled to include rebuttals to anticipated questions. No, it wasn't like shock treatment: that worked at a far coarser level, more like reformatting a disk than writing data onto it. No, it didn't rewrite actual memories: it altered underlying patterns in the brain, changing the worst predilections to better ones. It could erase memories if misapplied, but she didn't write that.

She finished the last sentence, set the computer to checking her spelling and grammar, and rolled her shoulders to loosen the kinks. "Come here, Ben." Lucinda listened, heard nothing, and repeated her call, adding a whistle. Still nothing.

The computer signaled before she could try again. She checked the words and sentences it marked, correcting most of them. She pasted the edited file into an email envelope and sent review copies to Pavel and Frances for their approval.

She heard padding up the stairs, and smiled. Just like Ben to come to her in his own good time.

The tall Rottweiler loped through the doorway. He stopped close enough for Lucinda to reach, sat, and cocked his head to give her easy access to the back of his ear. She obliged with a scratch, and his eyes went big with simple animal joy.

The first time she had seen Ben, she would have lost fingers trying to do that.

He still had seams in the black coat atop his head, from the surgery scars. The police had confiscated him and three others from a man now in prison for cruelty and breeding dangerous animals. With destroying them their only other option, they gave the Rottweilers to her study group, who made them their first test subjects.

One had died in surgery, inadequately sedated and restrained, thrashing and howling in throes that still haunted Lucinda. The rest received neural overlays from a tame, properly raised Rottweiler, the scope of the work narrowed and refined each time. Ben had been first, though of course he hadn't had that name at the time.

Lucinda pulled Ben closer, tickling him along his ribs, setting his leg to twitching. She had promised to adopt Ben even before the experiments went forward. She had felt obliged, for all the risk and trauma.

And if the rehabilitation hadn't worked? If he had stayed as vicious as the first time she had seen them in their cages? Lucinda tried not to dwell on it. She just would have managed, somehow.

Now there were more responsibilities ahead, more than a dog or three to rescue. She gave Ben a rub on top of his head, scars and all. She was ready—if she got the chance.

"I can't say I'm favorably disposed at first glance, Doctor Peale," said Mark Farrar. The Minority Floor Leader was white-haired, with a pudginess exaggerated by the droops of age and the slight distortion of the compuphone picture. "This proposal reflects the attitude I find distressingly typical in most scientists."

"What attitude is that, sir?" Lucinda asked with careful respect. Republicans

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held barely a third of the chamber, but by her responses so far, this vote showed no sign of following party lines.

"The denial of free will, of responsibility, in favor of chemical reactions manipulating us with the precision of textbook equations."

She almost smiled. If he thought the mess and tangle of hundreds of chemicals in the brain was precise, he had never worked in neurochemistry.

"Our project is not advancing a philosophical agenda," she said, "and neither am I personally. We are dealing with material matters, not ultimate causes."

"Exactly my point," Farrar said, with a crispness saying he had scored one.

She tried again. "Neurochemistry works in more than one direction. Recalling a memory makes the neurons holding it more responsive to each other, making it easier to recall in the future. The technical name is 'long-term potentiation,' and a similar process occurs with other repeated actions. They become ingrained along a path of least resistance, whether it's riding a bicycle, throwing a baseball—" She paused. "—or committing a gang hit. Accustomed actions become second nature."

Farrar nodded slowly. "Interesting." His pensive mien crumpled into a frown. "Those actions also carry consequences, which your proposed remedy appears to sidestep. Granted, it is very popular these days not to want to punish people for their crimes."

Lucinda hastened to interrupt. "You are aware, sir, that the neural impression procedure steers clear of most of the cerebrum, where memories are generally stored."

"I'm not sure I follow you, Doctor."

"Even though successful treatment would leave the subject no longer inclined to commit violent acts, the memories of the acts he committed that got him incarcerated would remain. The procedure is not sophisticated enough for us to tamper with those memories, and won't be in the near term. It seems to me those memories are likely to weigh on a newly enlightened conscience."

She watched him turn her words over. "Almost elegant, in a way," he murmured. "It might just work . . . that is, if the alteration works, and stays effective. I see no guarantee of that."

"There can't be, until we attempt it on humans. Theory is always incomplete without proof."

"Again, Doctor Peale, you have a point." His smile returned, half-strength. "Trouble is, a lot of us will construe this as another form of assault on capital punishment—"

"—final assault against capital punishment," said Chapiqua Norris, her dark, earnest face almost aglow. "The 'heightened burden' limit is a joke, an evasion of its inherent injustice. Healing rather than executing: that would be a tremendous benefit of your experiment—"

Lucinda let herself start smiling.

"—but it does nothing to resolve the root injustices of the system, the organized oppression of the Africans in America."

Lucinda's mouth fell into a frown mirroring the Majority Floor Leader's. "I'm not sure our procedure has any bearing on those roots. If it gets people out of the prisons and back to their homes as good citizens, though, I think that's a worthwhile result."

"Maybe, but what kind of man will be coming home? What kind of thoughts—*whose* kind of thoughts—will he be thinking? That's why I will need a comprehensive breakdown of the people providing the brain patterns to be imposed on them."

"I—Ms. Norris, we cannot do that. Our release forms contained strong confidentiality clauses."

"You don't need to reveal their names. Only their races, genders, sexual orientations, ages, religions—oh, what else?—of course, income brackets, theirs and their parents'. I'll have to talk

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with my colleagues about other categories."

"Well, that may be—"

"But race is strictly non-negotiable. It is bad enough that white American culture works to erase African culture, but to invade Africans' brains, wipe out their thoughts and replace them with white worldviews. . . ." She shuddered.

Lucinda realized that those teams at UCLA and Johns Hopkins were going to suffer harder scrutiny in their brain pattern surveys than they had realized. "We'll try to make every reasonable accommodation," she said.

Norris scarcely noticed. "I also want your assurance that your procedure will not erase the ability to commit civil disobedience. That's the only real measure of power Africans in America hold, and to wipe that out—"

"—wipe out the ability to dissent, to oppose the dictates of the government. That's why I am so worried," said Minority Whip Kathy Wen, her intensity obvious yet restrained.

"The procedure doesn't do that," Lucinda said. "I wouldn't be involved if it did. My goal is the rehabilitation of criminals."

"Yes, and by definition it is governments that decide what are crimes. My parents learned that back in China, and were fortunate to make it here with the knowledge. This technique has ghastly potential in the wrong hands, and power has a way of turning anybody's hands into the wrong ones."

Lucinda folded her hands self-consciously. "Ms. Wen, you overestimate our abilities. We don't have the technical ability to make and overlay new thoughts on a brain, and may never have it. I'm sure the Assembly can set any number of reasonable precautions for this trial, and any expanded use."

Wen grimaced. "Expanded use, as you say. If this succeeds, it will spread well beyond our legislative domain." She shook her head regretfully. "Don't take me wrong, Doctor Peale. I respect your efforts, and I think this could mend many lives, if kept within reason. I simply don't trust reason to hold permanent sway."

Lucinda offered a smile. "I'm a scientist. I believe the power of reason will win out."

Wen reflected the smile, with a melancholy twist. "That's where we differ. I'm a politician."

Pavel Patrusky laughed. "I'm impressed. They're almost thinking about this."

"I suppose so," said Lucinda, pacing from one cluttered side of his office to the other. "I actually welcomed some honest intellectual engagement, except that I got it in pieces. None of them ventured beyond one sliver of the spectrum, one tight view of the whole." She turned a sweet smile on Pavel. "I really wish you could handle them."

"Me, too, but that wouldn't w-w-work much in our f-f-favor." After the brief release of his laughter, the stutter had reasserted itself. "I'll work on those d-d-dossiers Norris wants. Hopefully the v-volunteers won't be too cross with all the new q-qu-questions."

"We might want to consider some assurances to other Assemblypersons. Mister Farrar seemed open to persuasion."

"The Republicans?" Pavel sneered. "F-f-f-forget 'em. They'll be all 'law this' and 'punishment that.' They w-w-won't try to overc-come their ignorance."

Lucinda looked at the carpet. "Maybe that's our problem, too."

"What?"

"Farrar has a point," she said, finally settling into a chair. "Our work, our field is based on the presumption of deterministic causes, no ghosts in the machine. The law is founded on the concept of free will, the whole being responsible rather than the parts. It's like relativity and quantum mechanics. Each theory makes sense, but nobody knows how to make them make sense

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together." She lifted an eyebrow. "Not yet, anyway."

"That assumes their theory is right," Pavel snapped. "W-we've got scientific proof. Where's theirs?"

"Let's wait a while," Lucinda said dryly, "before we crow too much about our proof. Our session with Zliceski starts at one, right?" Pavel nodded. "Fine. I can get some work done before then."

She was there for the mapping session with Burt Zliceski. He was immobilized, past what was necessary to keep his head still for the magnetoencephalographic scanner. His spiky steel-gray hair was obscured, but she could see the narrow eyes and blunt chin that hid nothing of the brutality inside.

Frances sat nearby, with a deputy close but out of Zliceski's curtailed field of vision. She drew out his recollections, one by one, not leading or sensationalizing or judging, but always gently pulling out the details. They went from the teenaged beatings and muggings through to the homicides, two of them never even prosecuted, and finally the double murder that had put him in jail for life without parole.

Lucinda squirmed in the equipment booth, fighting her horror. How could such people be? She thought of the jury, punctiliously splitting that hair between "reasonable doubt" and "shadow of a doubt" so that he could remain alive. Did he deserve such scrupulous care? Was conscience wasted on him?

She wrenched her attention back to the display of Zliceski's brain, flashing with activity. With each grisly detail that Frances coaxed from him, the pathways that made cruelty so easy for him appeared in greater detail, the roots in the caudate nucleus and putamen sending filaments into the frontal cortex.

There was no frontal lobe damage, as rather many of the worst criminals shared. That would make the next step easier—though it chilled Lucinda to think that Zliceski's brain could be considered undamaged, *normal*, by any standard.

She was there for the surgery, ensconced in the observation bay even though there was little reason for her to be. She had done her work, refining the data into a precise three-dimensional neural map, pinpointing the neurons that Pavel would use as fulcrums, placing his levers there to move a mind.

Lucinda watched Pavel and his assistants insert the microelectrodes, using robotics for the work too delicate to trust to human hands. Once finished, they slid Zliceski under the MEG scanner. They used weak test pulses to confirm that the electrodes were in the right places, then initiated the preprogrammed overlay sequence.

There was little to do but wait. The currents flowed along their appointed courses again and again, checking one neurotransmitter or releasing another, imposing inhibitions where there had been excitations. Long-term potentiations that would normally require months or years took shape within a few hours. Old patterns faded, and a new one charted in another man's brain began to emerge.

But did changing the cells change the soul?

She was there for Zliceski's first postoperative interview. She watched him enter the room, his head shorn and bandaged from the surgery, though with one fragment of scar showing a nasty red. He muttered a word of greeting to Frances before she and the guard strapped him in for the MEG scan.

Not until she had retired to the equipment booth did Lucinda realize that she had never heard Burt Zliceski greet anyone before without being prompted.

Frances asked some neutral questions to get a baseline, then began to probe his violent memories again. Lucinda saw the new activity patterns in his limbic system, almost a perfect match of their

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volunteer template. The impression had held, but did it make a difference?

Soon Frances stopped her own probing, and started an audiotape machine. On it were Zliceski's own words from several days before. Lucinda noted the added activity in the frontal lobe: he remembered saying those things. She watched closer.

"That's anomalous," she said to herself. The orbito-frontal cortex was beginning to light up. That happened when a person felt distressed. She looked at it again, and suddenly she began to suspect why.

"Doctor, can you turn that off?"

Frances obliged him directly, and started interrogating him on his emotional state. Lucinda listened closely, ignoring the scan for the moment, straining to catch his voice. Where was the menace, the challenge in every word she remembered from her interview, even when he was agreeing to volunteer for them? It couldn't be that easy.

But those doubts vanished like a lifting fog. She went back to the monitor for more esoteric signs of confirmation, as a matter of proper scientific form. Inside, she exulted in perfect confidence. They had succeeded.

The California Assembly's Human Services Committee was not as easily convinced.

Lucinda related the procedure and its results to date, summarized what could be achieved, and all but pleaded for an expanded opportunity for the team to make their case. The chairwoman asked some desultory questions, but yielded the floor early to the ranking Republican: Mark Farrar.

Farrar crossed his arms loosely. "Doctor Peale, a man can say he is reformed, without it being so. How can you objectively say that Patient One is no longer capable of criminal violence, when you have only your hopes and his claims on which to base your conclusion?"

"That isn't all the evidence we have. His frontal lobe patterns during interviews show that he's not attempting deception, and there are no indicators of pathological lying, where one believes whatever one says in the moment."

"I beg your pardon. You are saying you can tell by a brain scan whether a person is lying or telling the truth?"

"Essentially so," she said. "A research team at Penn State published a paper on that two years ago. I can give you the URL for it, if you like."

Farrar chortled. "Doctor Peale, I think you just made some people in this room very nervous."

There was scattered, apprehensive laughter in the gallery. Forced chuckles from the targets of his quip were outnumbered by bitter scowls. Farrar hadn't helped Lucinda's case at all.

Other committee members soon got their turns, with questions neither apathetic nor dispassionate.

"How many of Patient One's old memories did your experiment erase?"

"Does your inability to answer reflect indifference to the possibility of forced amnesia, or do you consider it a small price to pay?"

"Do you believe only scientists, or people hand-picked by scientists, have the emotional stability you seek to impress on, ahem, our correctional clients?" (And other people accuse scientists of using obfuscating jargon, Lucinda thought.)

"Should this procedure be performed unwillingly on violent inmates?"

"At what threshold of violence? What crimes are bad enough to warrant this treatment?"

"Do you consider this a treatment, Doctor Peale, or a punishment?"

In her personal conversations, she had been able to shade her responses to suit the listener, present the side of the whole she wanted them to see. She could not do that here, with the arc of benches looming above her, bracketing her in place. She answered with her best detached air, but she saw brows lower-

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ing, mouths tightening, eyes turning aside.

The floor came to the last of the Democrats, Hazel Tucker, a young black woman. Two members had previously echoed Chapiqua Norris's racial outlook, and Lucinda expected Tucker to be the third. She was not.

"In your experiment," Tucker said, "you removed a part of Patient One's psychological makeup, and replaced it with another person's. Is that correct?"

"Not exactly. We superimposed another pattern on some of Patient One's neurons, in a way to make the neurochemical reactions of the new pattern stronger than those of the old one."

"But in effect, a piece of his old personality is gone, replaced with someone else's." Lucinda nodded. "Could it be said that Patient One no longer exists, that he has been replaced by a new individual?"

"No," Lucinda exclaimed, then took a breath. "It's akin to genetic therapy. We can knock sequences out of a patient's DNA and replace them with new ones for therapeutic purposes. Nobody seriously asserts that this creates a new human being."

"But our consciousness, our self-identity, doesn't spring from DNA. It comes from the interconnections in our brains. Change one piece, and you have changed the whole. Is this erasure of personality not simply capital punishment in another form? Does this not imply that certain personalities have no right to exist?"

Lucinda raised her water glass to her lips. Tucker had really put some thought into this—but why did she have to bring up the death penalty again? Hadn't a few of her colleagues driven that wedge far enough?

"My purpose here is not to argue the merits or the justice of capital punishment, except to provide what I believe is a better alternative. As to changing the personalities of criminals, isn't that what prisons are supposed to do? They are called 'penitentiaries,' places where people repent of their misdeeds. We tend to forget that, because it happens so much less often than we want. We try to change their personalities from the outside in, with all the inefficiencies and failures you all know about. Our treatment does at once—or will do, we hope—what current systems cannot guarantee in any number of years."

Tucker did not yield. "The gradual rehabilitation we have today does allow for continuity. Changing someone's personality in an afternoon of surgery is like a break in a rope: it makes two ropes. Tell me," she said, leaning forward, "does Patient One feel like the same man who went into the operating room?"

Lucinda tensed. "He feels like a better man," she said, because she did not know the answer to the real question.

She called Speaker Gallegos the next day, to assess his impression of the hearing. She learned his impression all too quickly.

"I'm sorry, Doctor Peale. I cannot support placing this bill before the committee."

Lucinda flinched, but kept her eyes steady on the computer screen. "Doesn't it have a fighting chance? Pavel and I figured the split was almost dead even."

"Exactly. It's too uncertain. I won't expend valuable time in this session to offer a bill with an even chance of failure. We have many more important things to do."

"You could make it a rider," she said. "That's how the original authorization passed."

An amused Gallegos scratched his chin, looking like he was tickling himself. "That works when members are indifferent about a measure. Instead, your information campaign has polarized them. They won't let the measure slide through, no matter how it's offered. They're just too worried that this thing is out of the proper control."

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Lucinda swallowed an acid retort. "And whose control is that?"

"Ours, of course. Instead, other people choose the brain templates, set the standards of success or failure, and stand to reap the credit." He gave her a lofty smile. "Perhaps you should have thought of such considerations before you started your campaign. Good day, Doctor Peale."

"That can't be it." Frances sat between her two partners, so enervated her words carried barely a rumor of outrage. "Pavel, maybe you could persuade—"

Pavel waved his hand. "It w-won't work. Gallegos is t-t-too much the pragmatist. He'll move only if the v-votes move—and we've d-done our best." He caught Lucinda's eye. "Really, you did."

Lucinda shifted the posture of her slump. "I don't know if I believe you, but thanks."

Their meeting broke up moments later. Lucinda went back to her office, and sat brooding at the monitor displaying Burt Zliceski's latest progress report. He reported no rupture in his memories now, for whatever that was worth to Hazel Tucker, or anybody else.

He still wasn't pleasant company, but Lucinda could sit in the same room with him without wanting to flee or hide behind the guard. That was a leap. They had done so much for him—and he was going to be the only one. The program wouldn't last two years in limbo, hoping for a more favorable Assembly after the next election. It was doomed.

Lucinda propped her elbows on the desk and let her head drop into her hands. "No; it isn't," she said, half-vowing, half-pleading. "No, it isn't."

Gus Moncton's bandaged head made him look diminished as he went under the MEG scanner. Nothing could help that, although someday the transcranial magnetic stimulation people might produce something precise enough to allow neural impressing without surgery. Whatever the physical damage today's methods left on him, though, the man inside was renewed. His eyes no longer darted to all corners of the room, hunting for the slightest challenge to him.

"No, no nightmares last night, Doc. I guess it was a one-time thing."

The new group of volunteers was more open to rehabilitation, less disturbing to Lucinda. She was comfortable enough around them to conduct interviews herself. With Frances gone, someone had to pull up the slack.

Lucinda had gone to Gallegos's office alone, without telling the others. The proposal she submitted stunned him. For an instant she thought he would refuse, and felt a perverse premonitory relief. She was wrong, though. The offer was too personally tempting to resist, just as she had planned.

"I haven't felt any of the violent urges—not even about my shadow, Larry." Gus hooked a thumb toward the guard in the corner. Lucinda grinned, having forgotten about Larry.

Pavel had been horrified at first, but saw the pragmatic sense of it. Now the politicians could feel it was their program too, he reasoned. They could feel in control. The party-line rift her idea had created, they could deal with when the time came.

They tried to persuade Frances, but she would not stay. Her ideas of clinical perfection would bear no intrusion, even if the new brain-pattern providers didn't seriously distort the volunteer pool. Perhaps it was turf envy, the way some of the lawmakers thought.

Lucinda regretted Frances's quitting, but not her own actions that precipitated it. It hadn't been a very high price to pay—not for what they gained.

"Quit holding back, Doc. If I'm tough enough to have my skull cracked open, I can handle a few rough questions." Gus smiled affably at Lucinda, as he absent-mindedly rasped a finger along his chin. ■

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The Job Interview

Mike Moscoe

Illustration by Beryl Bush

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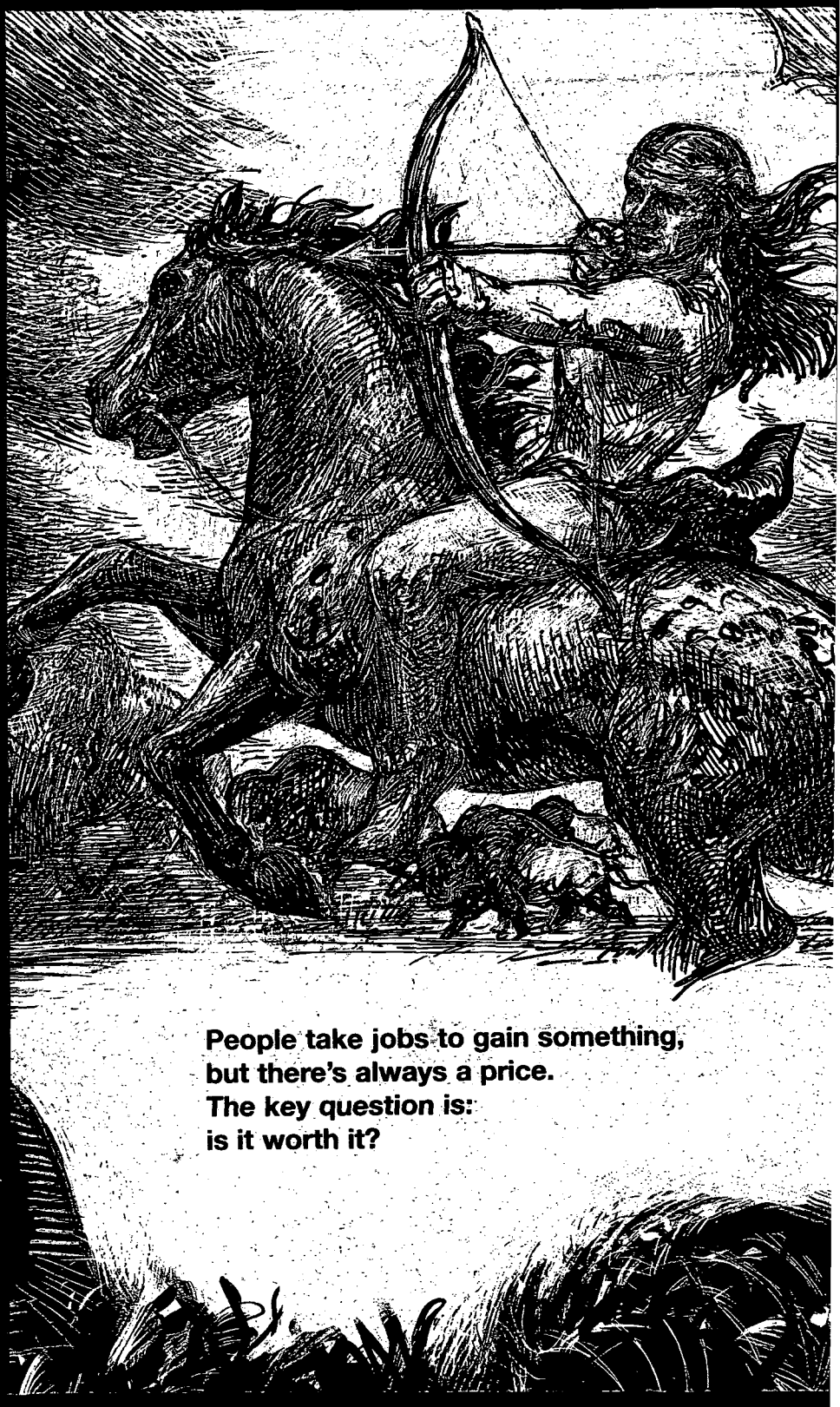

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In the deep shadows of the casino bar, Casi collapsed into the offered chair; it wasn't her arthritis that made her knees go to jelly. Digging madly through the dustbin that was her brain of late, she struggled to find some of the courage that had gotten her through so much of her eighty-five years. She kept her eyes down, and didn't allow herself to stare at the stranger settling into the chair across from her. Either Casi was going crazy, or the guy was an alien . . . and not as in "illegal" from south of the border—more like "impossible" from south of the Milky Way.

The young barmaid immediately showed up to take their order; the hostess took in the stranger in the blue three-piece suit without even a blink. Didn't she see the line where the nose had been glued on? How many four-foot-tall men walked in here with the fluid dexterity of something with no knees, probably no bones?

"A, ah, tonic water," Casi stuttered.

"Same for me," came from across the table. The stranger's lips moved, but Casi swore the sound came from somewhere behind the nose.

"Coming right up," the waitress said and left without a backward glance. Well, the casino bar was dimly lit and the light over the table was off. Its breaker must have been thrown as part of the construction work that wrapped the smell of dust and plywood around Casi and drove the other customers to cluster closer to the door. Still, in the minutes since the stranger had tugged politely at Casi's sleeve, said "Since you are wearing the red feather boa, you must be the woman I have come to talk with," and steered her toward the bar, there was no denying the obvious. This stranger did not belong to the Earth Casi had spent the last eight and a half decades on.

But aliens only exist in movies or TV, the rational part of her brain insisted. Casi liked that reasonable part of her; it was always good for a laugh.

Right, and never date a pilot and the North Koreans will never come south, she reminded her smart self of only a few of the rules that had not worked in her life. Face it, gal, that makeup isn't covering this guy's skin all that well. Look at the play of colors sweeping over him.

Maybe it's just the reflection of the neon lights from the beer signs behind the bar, her rational self offered lamely.

Give it a rest, Casi told her conservative voice. She'd always been one for second thoughts, just never one to pay them any mind. She'd come here to talk about a job; she should have known no one on Earth had any use for a worn-out relic like her.

The stranger seemed satisfied with the silence so it stretched while they waited for their drinks. Casi had an hour until bed check at Stalag Elder Care as she called the assisted living center her daughter and granddaughter had sentenced her to after she broke her leg skiing. "Mom, it could have been your hip, and then you'd be totally up the creek. You can't keep acting like you're Elie." "Honey, I wasn't half as rational as Elie when I was her age," got a giggle from her granddaughter and a scowl from her daughter . . . and didn't get Casi back into her own home.

Getting comfortable in her chair, Casi wondering how many other little old ladies, or spry young chicks for that matter, would have taken one look at this stranger and made a beeline for the door. Then again, Casi had never let first impressions scare her off. Casi centered herself for what would have to be *the* conversation of a very long life. Silently, she muttered a Christian prayer, a Buddhist mantra and a "Don't fuck this up," from Steve, and waited for this man . . . no, creature . . . well, potential associate . . . to take the lead.

The drinks arrived. As the hostess departed, the stranger lifted his glass. Casi leaned forward and did the same. As the two glasses touched in toast, the stranger spoke. "You have lived a most interesting life."

Casi could only smile at the memories.

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"I wasn't bored very often," she agreed.

"Cassandra Shepherd, we want you to teach our young," was accompanied by a bluish-brown tinge to his skin that the makeup could not hide.

Casi gulped; taking a long pull on her tonic water, she wished she'd ordered a scotch, straight up. Strong. "Ah, I thought you'd want to talk to me a little about my experience before we got down to business."

"As you must have concluded by now," the stranger said with a boneless wave at himself, "I was not born on the same planet as you. My race is very old. Most of us have passed several hundreds of your centuries through our lives. Our young need to learn, to taste the experiences of other lives. All your messages on the Old Farts Internet discussion group had such intriguing flairs and twists to them. Your memoirs that you sent me were very helpful. Not just all the things you did, but what you thought about them, both when they were happening to you and now that you have had time to reflect. You made my decision very easy."

But what about *my* decision, Casi kept to herself. When I was swapping emails with you, I figured you for a kids' daycare that needed a nice old lady to tell the preschoolers stories. What have I got myself into?

"I think you will find your work very rewarding," the stranger continued. "In return for you sharing your experiences with our youth, we can offer you a long, healthy and comfortable life with us. I notice that you are using a cane."

Casi snorted at that bit of redirection. So that was the coin the stranger offered—and wanted. For her memories, he would barter immortality among the stars. Casi made a face at the stick that had become her third leg now that an arthritic hip had robbed her of balance. "My mom swore I learned to prance before I could walk," the old woman chuckled at another woman's hyperbole. Casi reached for the cane, fingered its well-worn wood . . . and remembered.

Breathing heavily, Casi glanced back at the assisted living residence, huddled low and unassuming beside the beach. No one had followed her; she'd slipped out while all the other staff was busy with another one of Mrs. Breckenridge's tantrums. Casi shook her head ruefully. The gal who'd shimmied under the air base fence in England back in '44 and raced to get to the unauthorized dance at the Victoria Inn was now reduced to using diversions to cover her hobbling.

At the beach stairs, the wind and salty air whipped at her coat, ruffled the red boa at her throat . . . and stole her warmth. Any other day, she would have limped back to her room. Today, she took the steps one at a time, first setting the cane solidly in place on the next step down, then getting a firm grip on the handrail, finally moving the good knee down, then the bad one. Damn, what a way to live.

But the Sun caught her eye. On the Oregon coast, most days the Sun just vanished into a cloud bank an hour or two before sunset. Not today. You could almost see the ocean sizzle as the Sun touched it. Casi paused for a moment on the last step, leaning on the rail to catch her breath . . . and blinked back tears.

The Sun had been low outside the window while she clutched Steve's hand, keeping him company one last time as the darkness came for him. She watched each labored breath. The long illness had turned pasty the face once so tanned and handsome. Through the window, the setting Sun rouged his brows to false health. It took her a few minutes to realize that there had not been a next breath for quite a while. She etched the gentle smile on his face into her memory.

Here, at the home, she wondered who would hold her hand when the darkness came for her. So many of the women died alone in their rooms, for-

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gotten by those they'd given life, a life that had become so full and hectic that it left little time for what couldn't be scheduled several months ahead in their day planners.

Casi shivered as the breeze again ruffled the feather boa at her neck and glanced up the beach to the casino. No use sitting around waiting for death, not while there were still plenty of good miles in her. A job was just what she needed to get her off her duff.

"We love our children very much." The stranger changed the topic, and drew Casi away from recent memories. "I have often watched you among the children here at the casino."

"I never saw you before," Casi said, still off balance. Who is this guy? No, *what* is this guy? Since the stranger was barely four feet tall and walked with a catchy bowlegged roll, she would have noticed him in the casino.

His skin turned uniformly blue under the makeup for a moment, and he uttered a sharp bark of a laugh. "We have other ways of observing that do not require our presence, I assure you. But one thing I have never understood. You are always in disagreement at the casino with Windy Half-Moon, the tribe's wise woman. She says the children belong in the free daycare the tribe established for them, not loitering around the casino. The law forbids anyone under twenty-one to cross the line between the foyer and the many rows of slots and other gambling machines. Why do you argue that the children should be permitted to just stand around? Certainly, that must be boring for them."

Casi nodded, still trying to absorb all that the stranger had thrown at her. As she had so often in life, she put her mouth in gear while her brain was busy elsewhere. "We were in Korea in 1950," she began. And the memories came flooding back.

Casi watched Steve peer at the low-flying airplane. His lips were tightly pursed, but there was a tremble to his chin. His war was coming back to haunt him again. Casi glanced at the plane; it rose into the warm blue sky as it skipped over the stark Korean mountains, then dropped down to race along the valley that held the mission clinic and orphanage. "Honey, I think we have a problem," Steve sighed.

Casi hastened to him, an orphan on one hip, their own Beth on the other. From the wash hut, Reverend Dunlap and his wife stepped off the distance to the billowing laundry on the clothes line, each carrying a load of diapers, fresh from a boil over a wood fire. Behind them, unwed mothers used wooden paddles to stir the large iron pot and pulled more diapers from it, dumping them on the stone floor to cool.

"What kind of airplane was that?" Casi asked, watching the single-engine, low-wing plane as it rose to scale the next ridge, then dropped out of sight. It didn't look like any she'd seen over England during the war. Or those pinned up on club walls to encourage gunners to learn them—and shoot them down.

"That's not a Mustang, Casi. If I remember right, it's a Russian Mig or Lagg. Markings are North Korean."

Casi glanced north, to where the demarcation line between the two Koreas lay less than a hundred miles over the next hill. Steve followed her gaze. "If it's this far south," he said, "it won't be alone."

Casi turned to where the missionary was hanging diapers over the clothes line to dry. They'd signed on to work here for two years, Steve's penance for all the death he'd delivered in the war. "Rev, have you listened to the radio today?" she called.

Reverend Dunlap shook his head. The radio was for providing hymns at evening, after a long day of doing what needed done, not for sitting around while the Sun was up and work was waiting.

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"Love, I'll go hear what can be heard," the Rev's wife said, finishing her load of laundry. She and Steve headed for the parsonage while the old minister turned back for another load of diapers. Casi pulled two dried ones from the line and began changing her two infants right there in the warm sunlight. She was just depositing the wet ones in the to-be-washed hamper when Steve returned.

Casi knew the news before he said a word. His lips were tightly pursed, his eyes narrow and tight. She'd seen him like this, after a long, dangerous B-17 mission over Germany. She held Beth close. Then, feeling guilty, she held the Korean orphan just as close.

"The North Koreans crossed the border this morning," Steve said curtly to the missionary. "All the radio stations in Seoul are off the air. Radio Pusan says not to panic, 'our gallant Korean forces are fighting valiantly.'" He turned to Casi. "I'm sorry, Honey. I've dragged you halfway around the world from one war, only to dump you and the baby into another."

"We're together," Casi said. That was enough for her. He came to her and gave her a hug. Beth and the other toddler in her arms began to whimper, feeling the adult tension and not at all reassured.

"We better take to the hills," Reverend Dunlap announced.

"I'll put together food," his wife said calmly.

"I'll get the medical gear," Casi added. They'd brought two footlockers of supplies for the small dispensary. After only three months, painfully little was left.

While Casi stowed bandages and aspirin bottles in an old army pack, word flew quickly through the compound. Women who'd survived all that the Japanese had done to them, and were struggling to raise their bastard children with no support from their families, took it in different ways. A few had taken all they could; they ran off, abandoning their children. Two went hysterical, their shrieks rattling the compound until Casi could get them sedated. Most, however, took the news with a shrug of resignation and turned to help Reverend Dunlap and his wife cook food, stack clean diapers and all the other things they and the children would need. Casi spent most of the hot summer day in a steaming kitchen boiling rice and rolling it with whatever was handy, peanut butter, bits of raisins, fish, cabbage . . . anything.

Sometime during the day, the handful of travelers on the road below the mission turned into a stream of refugees. By the time they left at sunrise the next morning, it was a torrent.

The lucky ones moved on ox-carts; they were few. Most walked, all their earthly positions wrapped in bundles on their backs. Reverend Dunlap and his wife went among their charges, checking the load of each of the women, using sacks, cordage, cloth to load them, trying to limit the burden to essentials. Still, even the pragmatic Steve could not make these poor women discard the last personal possessions they had. All but the youngest children carried at least a small sack; everyone knew they would eat only what they carried.

For Casi, this was her introduction to the horrors of a civilian population in flight. England during the war had its problems, but nothing like this. Korea, by the time she and Steve arrived with Beth, had begun to put itself back together. She'd known when she took the job that they would be helping the unwed mothers from the last war. The children she tucked into bed each night looked like any other Asian to Casi. To the Koreans, they were clearly mixed breeds, half Korean, half the hated Japanese conqueror.

Now, the women and children of the orphanage joined the stream of fleeing Koreans. And Casi began to see some-

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thing in small eyes that she had never seen before . . . and never wanted to see again. She could tell the orphans from the others.

Her children slogged along, eyes down, accepting another day and whatever new pain it wrung from them. The other children on the road also plodded along, but their eyes flitted from one parent to the other, always looking for them, never willingly turning their back on them. Their world was tumbling into chaos; their parents remained their single hold on the normal.

And then the parents began to go away.

The plane came out of the sunset, zooming down the road at 300 miles an hour plus, strafing all that lay before it. A rock chip slashed Casi's cheek, but the blood on her face was nothing compared to the bloody wreckage that single pass made of the road.

She found Steve beside a dying woman. The growing darkness made it blessedly impossible to tell wound from clothing, but the stench of blood and bowel told Casi the woman had only moments to live. Beside her, two children whimpered. "Find my husband, give the children to him," was broken up by a hacking cough.

"We will," Steve promised as breath left the woman.

"Who was she?" Casi asked.

"I have no idea, and no, I don't know who or where her husband is," Steve said, putting the woman's hand down and picking up the two children. But the plane had left too much destruction in its wake; quickly the children were passed to a single mother. As much as Casi hated it, she and Steve had to go their separate ways, care for whom they could. Even in the carnage, though, or maybe because of it, Casi would not put Beth down. Casi did the nursing she'd been trained to do while fighting not to be ripped apart by all she was helpless to cure . . . and Beth slept innocently in the sling under Casi's left breast. Through the horror, Beth was the one bit of warmth Casi held onto in a world grown deathly cold.

It was hours later before Casi found Steve again. "Whose plane was that?" she asked as they tried to catch some sleep and keep each other and Beth warm as the night's temperature plummeted.

"Who knows," Steve sighed. "At three hundred knots, you can't really see what you're shooting at. Somewhere around a hundred knots, I suspect the conscience gets out." There was no bitterness in his voice, only the painful distance that always came when the demons of his war came back to visit.

The next morning dawned clear and quickly grew hot. On the road, the refugees added dust to their growing list of pains. The newly-made orphans joined the rest of Reverend Dunlap's charges. Shock at their newly fallen state seemed to shield them from fully realizing their loss.

Mothers and fathers on the road looked anywhere else but at the orphans. Somehow, if they could only avoid seeing those whose lives had been wrecked by the ever-present demons, they might just possibly protect themselves and their own children from a similar fate. Kids still fortunate enough to have a hem or trouser leg to hold on to, did so with a death grip. Now small eyes flitted from one parent to the other with a new desperation, trying to hold on to all that was left of their world lest it fade away when they glanced elsewhere. Holding Beth close to her heart, Casi had only a moment to wonder which was worse, the pain of loss suffered, or the torture of loss feared for.

"Blessedly, Beth was too young to know what was going on around her," Casi told the stranger, feeling drained by the memories but compelled to finish the story. "Or maybe I did a good job of

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holding her close. Reverend Dunlap took us off the main road around noon that second day. There was no way our kids could run faster than a modern army in conquest mode. Rev knew of another mission, higher up on the hills, run by a young priest."

"Your missionary would put his trust in someone not of his own faith?" the stranger asked. Even as deep in her memories as she was, Casi noted that no eyebrow rose at the question. Instead there seemed to be more green flitting across his skin. Another new language to learn. She'd done it so many times; she could do it once more if it let her be useful again. If they really could give her back her health.

"The priest took us in without a second's hesitation," Casi answered, remembering her own surprise at the time. "When somebody's army sent a patrol out looking for supplies, we knew about it an hour before they arrived. Padre had a couple of caves even farther up in the hills outfitted as a last refuge. Every one of us made it to the cave with time to spare, Steve pulling up the rear, dusting our trail to hide it. Padre and Rev may have said their prayers in different languages, but they cared for people first and foremost. And couldn't help but love anyone else that cared the same way." Casi smiled fondly at that recollection. The stranger showed a pleasant shade of blue.

"We spent most of three months up in the hills, watching, getting more hungry by the day. I learned to grub for roots and even joined in the padre and Rev's prayers that no one would turn us in to the new regime. Then gorgeous dugout Doug landed in Inchon and the North Koreans ran back north as fast as their worn-out tennis shoes would let them.

"But over the next two years," Casi finished, lost deep in thought and memories, "I looked over and over again into the eyes of kids who had lost everything and forgotten how to cry. And kids scared beyond terror of losing their world, desperate to not let their folks out of sight. I swore then I'd do anything I could to make kids like that feel better."

"But the children at the casino are not refugees," the stranger said. "There is no war here on the Oregon coast to take their parents away from them in a flash."

Casi sighed and allowed herself a dry chuckle. "Now you sound like Windy Half-Moon." The stranger tried to shrug shoulders that didn't seem made for that motion. His skin rippled with colors so quickly they almost merged together.

How often had Casi tried to find the words to persuade Windy . . . and failed. Damn, but she was doing a lot of failing these days. "Children live in the moment," Casi said slowly. "You can't just tell them that there is no bogeyman. All you can do is hold their hand and go through the dark with them. These kids on the casino floor know there's daycare for them. Most have spent some time there. But their world is full of friends whose mommy or daddy went away. They don't understand how or why, they just know that if you let your world out of your sight, it may not come back."

Now it was Casi's time to shrug. "Maybe you have to have been there. Seen the look in kids' eyes yourself before you can taste the full terror that haunts those little ones."

The stranger settled back in his chair. "Yes, maybe you have to have been there. Tell me, will your family miss you?"

Another fast change of topic. Casi had been off balance from the moment she first saw him and it was only getting worse. Was this fellow taking advantage of that? Was he trying to hide something? Still, Casi answered the question put to her. "My daughter Beth now is a vice-president pushing software sales. She stops by at least once a month. My granddaughter Elie is out of college now. She has a guy and her own career to get started, so she's coming by less and less. I've given them both a good start in life. I love them, but I think they've heard

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my stories a few times too many. When I'm gone, they'll miss me, but I'm more of a worry to them than they like, that wild-eyed old woman who won't act her age. I wrote a letter to them this afternoon, telling them I was going to be gone for a while. Not to worry." Casi hadn't been sure why she did that. After all, the kid-care place she'd thought she was applying for couldn't be too far away. Or had the unthinking part of her brain already been adding things up on its own?

Interesting.

"When you live long, you must make friends beyond the pod of your own genes," came from across the table. Casi could see that point. Just how long did these folks live? How long could she expect to live in their company? Should she ask the question?

Not yet, she decided and took the time to try to get her bearings. Casi had been in quite a few job interviews in her life. Some had been run by people who knew what they wanted and moved quickly to the point. This fellow certainly had made his point quick enough, but now he was letting things wander, and as much as Casi hated to admit it, at eighty-five, she had enough memories to let her do a lot of wandering. She'd learned early on that there were two sides to every job interview. Did they like what they saw and want to hire you was the side of the coin that most folks spent their time worrying about. Casi paid plenty of attention to the other side. Did she want to spend a chunk of her life doing what the interviewer needed doing? She and Steve had damn near gotten killed doing the doing several times. Riding some starship a couple of hundred light-years out from Earth would be a lousy time to discover there was something about this job she really couldn't stand.

"I've had a lot of teachers in my life," Casi said, centering the discussion on what she was supposed to be doing for her keep—educating their young. "I've learned a lot from many folks. A few of them were even supposed to be my teachers," she chuckled, and the stranger's skin ran to blue again. "Will I be going to some kind of school to learn how to teach your way? How long do you think it will take me to learn your language well enough to get all the nuances of my experiences across to your young?"

The stranger's skin got even bluer beneath the makeup, though there were flicks of red running over him as well. "I assure you, you will have no problem communicating to your students," he said, reaching into the inside coat pocket of his suit and withdrawing a small device that could have passed as a portable tape player. Placing it on the table, he unwound two thin cords with flat pieces at the end of them. The stranger placed one to his forehead and offered the other to her.

Beyond surprise, Casi picked it up. Cool to the touch, it was neither rubber nor metal; Casi took it for some kind of ceramic. Then again, it could be something the best material engineers on Earth had never dreamed of. She put it to her forehead.

The day was warm under a blazing sun. Fluffy clouds moved slowly across the almost painfully blue sky, casting the only shadows on the plain before Casi. The gentle breeze cooled the sweat on a nearly naked man's body that she now seemed to be living in, and brought to her nose the smell of warm earth and grass, horses and other men. Beside her, those men sat their ponies, waiting patiently for the leader to call the hunt. Before her, moving across the grass like the splendid animals they were, thousand upon thousands of buffalo grazed. Behind her, the women waited to butcher what the men slew.

Casi's belly rumbled. She had eaten little for the last three days. The men and women around her were gaunt. The life of the tribe depended on this day's hunt. Casi pulled an arrow from

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the quiver at her back and nocked it to her bow. She would bring down one of the mighty buffalo or die in the trying.

The leader raised his feathered coup stick over his head. Casi knew what would come next, but she waited with the others. "Let the hunt begin," came in a language Casi did not recognize, but she understood every word. She kicked her pony and she was off, wind flying through her hair, the horse throbbing between her legs.

Casi found herself facing the stranger once more. The bar seemed so dark and dingy after that bright open sky. Casi still held the adaptor to her forehead, but the stranger had removed his. "Wow," Casi breathed slowly. "I was there. I was a man of the . . . what tribe was that?"

The stranger blinked several times, then shook his head. "I do not know. They call themselves the People. I suspect only an anthropologist could distinguish them from those they knew as the Not People."

Casi nodded, "Right, I remember that now." She had been so swept up in the feelings of that moment that she hadn't processed all the memories of the man she was. Still, a part of her made a note on the limits of the teaching technique. It was a total immersion in being there, but it only told her what the person who was sharing the memory knew about that day, that world.

"That was spectacular," Casi said, still not fully back from the moment. "I would have loved to have actually ridden in the hunt. To bring down one of those majestic beasts with only a bow and arrow."

"That is one of my fondest memories of all that have been shared with me," the stranger said.

"Would you share the rest of it with me?"

"No."

That brought the conversation to a roaring halt. Having had the moment, Casi really wanted more. Still, if that was all he would share with her, she supposed he had a reason for it. It would be nice if the reason was forthcoming. She was, after all, giving up all she'd ever known to go with this stranger and teach his young. Casi decided to let the silence stretch and see who broke it first.

The stranger did.

"My people have had this way of sharing memories for many thousand of your years. We acquired it from an even more ancient race, and still do not fully understand how it does what it does. One of the problems that we have not been able to solve is that, in the exchange of a memory, those who are, you would say, listening, acquire a rich and full memory, not only of the experience, but also of what you thought, felt, believed at that moment and have grown in awareness since. We are fully you in your realized experience."

"Yes," Casi said. There was something more, something that the stranger had been hiding, or at least reticent to admit. She held him with her eyes, demanding he finish his thought. The silence stretched and began to bend. The stranger finally broke.

"When you have shared the memory once to many of our young, it will be gone. You will no longer remember it."

"No!" was out of Casi's mouth even before she knew it was open. If her knees had been up to it, she would have jumped to her feet and ran for the door. Teaching was one thing. Sharing her memories, maybe even letting a strange presence wander around in her head was probably doable. But being stripped of her past. No longer to remember Steve, Beth, Elie. All her friends. Who would she be without her memories? What would she be? Her hand went to her neck. The feather boa was there; she stroked it convulsively. "No. I could never."

"There is nothing to worry about," the stranger said, guessing wrong at what made her go ashen. "You saw that this alien technology did not hurt me.

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This is not like a stroke where part of your brain dies. It is more like Alzheimer's, where connections between the neurons for a portion of the brain are disrupted. Yes, I am suffering a dull headache, but medication is even now curing the brain damage my transfer of that memory to you did to me," the stranger reassured her.

If that was the best he could do to soothe Casi, his species had a lot to learn. At the word Alzheimer's, her blood froze. For everyone there is an ending to life that seems worse than all others. For Steve it had been cancer, and cancer was what took him. For Casi, it was the loss of herself that Alzheimer brought, a loss that left the body a hollow shell. She'd once seen the autopsy picture of a brain ravaged by Alzheimer, so many of the convolutions of a health organ unraveled until the brain was almost as smooth as a baby's bottom . . . and the person as helpless as a new born.

"I can't lose my memories," Casi choked, so limp with terror that she could barely keep herself upright in the chair.

"Aren't there some times in your life that you would be glad to forget?" The stranger asked, raising an eyebrow, and causing half of it to come unglued.

"Yes," Casi admitted, struggling to listen to him. What had he said about medical treatment that cured the brain problem? Floundering inside, Casi let her mouth go on alone. "But there are moments I will treasure for the remainder of my days." Things were moving too fast. Casi needed time to get a handle on what she'd been offered. The full cost she would pay for it. The feather boa tickled her neck; Casi swallowed hard, remembering . . .

Her uniform raincoat was muddy from where she'd shimmied under the air base's fence. Casi tried to brush it off as she trotted down the cobblestone lane toward the center of the village. She'd been told the cottages to her right and left were Queen Anne originals. To Casi they were just perfect for a picture postcard of an English country village. Ancient.

So little had changed in this land of rain and damp grass and narrow roads. She often expected Shakespeare or Sir Walter Raleigh to come round the next corner. But back at the base, the most modern weapons of destruction that man could create were being patched up to do battle again tomorrow in the sky over Germany. And in her hospital, men were likewise being patched together, healed of burns and wounds that no knight in the Great Bard's histories had ever faced. But too often, it was what was in their heads that killed them.

"God, I need a night off," Casi breathed and rounded the corner; the town square lay before her. And blessedly, there were no MP's in front of the old Victoria Inn. Once again, Sammy had talked the military officials out of placing the dance hall off limits despite last weekend's brouhaha.

Casi smiled to herself, fingering the red feather boa at her neck. She hoped Sammy had plenty of words left. This week, she might well be the subject of the general's Monday uproar.

She was careful going through the Inn's double doors. The street was at one angle, the door jamb at another, and the floor at a different slant still. What was it about English buildings and straight lines or ninety degree angles?

The public room, off to her right, issued forth with its low rumble of talk from old men who must have been there when Boston was still in the Empire. The smell of pipe smoke and bitters was just as ancient. But that wasn't why she was here.

Sammy White—Chalky to the locals, Sammy to the troops—had turned the tea room into a dance hall for the troops. While the USO provided good, wholesome entertainment, with the

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chaplain, the CO and everybody and their aunt looking over your shoulder, Sammy provided a place where folks could meet and have fun without looking back.

Tonight, Casi wanted to meet someone. And God Himself better not bother looking over her shoulder.

The nurses had their usual table, with a large bay window on one side and the loo, as the Brits called the ladies' powder room, on the other. There was a back door just past that essential room; a good line of retreat if the boys got rambunctious and the MPs were called in to calm things down. It wouldn't do for a nurse to be included in the morning report from the military police. Some of the girls had put it to a better use, disappearing out it with a friend. Casi had never done that.

Tonight that was subject to change.

Doris and Gertie already had the table started. Casi slipped down beside them and began shucking her raincoat while she studied the collection of maleness available. Usually she just took them in. Tonight she was looking for a particular one; she must have been a bit obvious.

"Who's the lucky guy?" Doris asked.

"A major, name of Steve," Casi admitted.

"Steve who?" Gertie tossed off, her fingers snapping to the beat of the band, her gaze not straying from her own evaluation of the night's available beef.

"Don't know. The paperwork went by too fast for me to get the rest. It was last Tuesday and things were a bit busy." Both the other nurses groaned at the memory of that day. The groups at the base had lost too many planes, and the ones that came straggling back had too often been just a twisted collection of metal flying in loose formation.

With the OR packed, Casi had offered the major a swig of medicinal brandy before cleaning out his wound herself. It was just a shallow slash down his right arm, probably done by flying Plexiglas. As she sewed him up, she couldn't help but like the guy. Some men babbled when they had small-time hurts. Some bragged. This guy was one of the quiet ones. "You're lucky, Major," she offered to break the silence between them.

"Jake's the lucky one. Jake and Ben and Pete," the flier said, never taking his eyes off the OR's double doors, as if his stare might make them yield up the buddies he'd named. When she was done, he'd gone on his way with a polite "Thank you, ma'am." That was the way it was. There was paperwork for him after a mission and a room full of casualties for her. Nothing might have come of it.

But she couldn't get that taciturn fellow out of her thoughts. It wasn't just that he was good looking; lots of guys were. There was something else about the man that she couldn't put her finger on. Something she liked—and something that scared her. Over the weekend, she went looking for a Jake and Ben and Pete. She found them together in a ward, bandaged like Egyptian mummies . . . and only too willing to talk about Tuesday.

They were on final approach to the target when a German shell turned the front of the plane into a sieve. The co-pilot was bashed something horrible, the flight engineer's leg was shattered, and the inside of the cockpit had more blood than paint. Still, the bombardier, in between gray-outs, swore he could still hit the target. Steve said go, so they did. But as soon as the bombs were away, he horsed the plane out of formation and dove for the clouds two miles below. The gunners kept the Messerschmitts off them, but once in the clouds wanted to bail out. Steve refused. "You can jump if you want to, but the guys up here would never survive a chute drop. This plane is going back to England."

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Or Steve would die trying, Casi added. She wanted even more to know the full name of their pilot, but the men drifted off, exhausted by their tale. The hospital had another busy day and when she got back, those beds had others in them. The nurse on duty explained those men were already on their way back to the states.

Which left Casi hunting for a quiet major named Steve, who had determined eyes and courage enough for a planeload. If she remembered right, she'd seen him at the Victoria Inn before, jitterbugging like a natural-born fanatic and having a ball with his friends.

Casi eyed the crowd tonight with a sinking feeling. She would have sworn she'd seen him here before, but she wasn't seeing him tonight. She settled back in her chair; the night was young.

It was an hour later that a dozen officers and men came in, shaking the perpetual rain from their coats and calling for drinks. Steve was the last one. Casi swallowed the lump that rose in her throat, watching the quiet man settle himself at the table his more boisterous friends had taken over. He sat in a fortress of quiet as those around him ordered up drinks, then picked out girls for a dance or two. His eyes moved over the uniformed crowd with a distant stare, lost within himself. This man was not the dancing fiend of a month, even a week, ago.

Casi'd seen the look of him before. Good men who'd emptied themselves until they had just one more mission, actually half of one, left in them. If Steve was lucky, one of the docs might pull him out of the flight schedule. But Casi doubted this determined man would let any doc get close enough to notice what was no longer there. She doubted Steve himself could see how close he was to getting himself and some new crew killed.

That smart part of Casi said run, don't walk, for the nearest exit. This man is going to crash and burn—and anyone who gets too close to him will only have scars to show for it. Casi laughed to herself and flipped the red feather boa over her shoulder . . . and knew she'd already made up her mind to deal herself into his life.

Problem was, how to get him to include her in what was left of his life. Steve had that long, empty stare real bad. To him, she'd be just another uniform among too many. "Excuse me, gals, I need to powder my nose," she said, slipping away from the table. The other nurses, busy with their own chats and dance partners, didn't even notice her as she left.

In the loo, she took a stall for privacy and pulled an empty dirty clothes sack from her uniform pocket. Quickly, her uniform jacket, skirt and shirt were folded into the bag. Under it all, she wore not the regulation white slip but a bright red chemise she'd paid a fortune for the last time she was in London. She'd been a little daring and worn it under her uniform a few times. What she was about to do tonight would give a whole new definition to that word. The thin straps of the chemise did not cover the thick white cotton bands of her regulation bra. Well, the whole idea was not to look like just another girl in uniform, Casi growled, and unsnapped the bra.

"If this doesn't catch his eye, he's already dead, girl," she told the mirror as she checked herself over. It took only a moment more to refresh her lipstick and add a fluff of powder to her face. She glanced at her feet; the shoes were very practical and totally out of place. She tossed them into the sack; she'd go barefoot tonight.

One last glance in the mirror told her she was damn near bare-naked. "Is the guy worth it?" she asked the woman who looked back at her.

"Yes," she answered. With a devil-may-care toss of her head, Casi swung the clothes bag behind her and opened

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the door.

The six G.I.'s who were doing their best to substitute for a full swing band had finished "Don't Sit under the Apple Tree with Anyone Else but Me," with Gertie providing the lead vocal. They were segueing now into a nice slow "In the Mood," as Casi made her entrance. One step into the room and a long, loud wolf whistle from across the room announced to all and sundry that there was something very eye-worthy out tonight. Casi took the few steps she needed to get back to her table, as wolf howls broke out. She slid her clothes bag under the table. "Look after that for me, will you?"

"But who will look after you?" Doris shot back.

"I'm a big girl now. I can look after myself."

"God help the guy," Gertie said, sliding back into her seat.

Casi turned to face a room full of men with eyes only for her. The fire, lust, wanting in all those eyes brought warmth to her cheeks. If she stood here too long, she'd be as red as the bit of silk that stopped far short of her knees and barely covered her breasts. The feather boa at her neck fell in two strands, each swaying, each tickling a nipple.

Casi wasn't risking confinement to barracks for the rest of the war just to stand here like a scarlet statue. She walked, hips swaying with the music, across the dance floor. Couples made way for her, men ready to swap partners, women with curiosity or anger smoldering in their eyes. Casi ignored them. Her eyes were locked on Steve.

His eyes were lost in a vague stare at bubbles in his glass of bitters. She came to a full stop at his table before the heat of her concentration got through to him. Then he glanced up.

In a second, recognition flooded into his gaze . . . followed closely by a flinch. And Casi knew the memories she stirred in his mind's eye included far more than a nurse offering him a drink as she patched him up. Casi almost broke and ran.

Almost.

There are many kinds of courage in the human heart. Casi had seen Steve's courage. She was damned if she wouldn't show him hers. Yes, there was a war on. Yes, she could lose him tomorrow. But, damn it, right now he was available and she wanted him.

"Hi, flyer. This dance is yours," she said, her voice husky, her wants blatant.

"I don't dance very well," Steve lied, leaving Casi to wonder if a man could be so brave in the face of German fighters and flak, yet funk out in the face of a mere woman.

"Dancing is easy, fly-boy. It's the living that's hard. Let me show you how," Casi said, lifting a hand for him to take.

"If he don't want to dance, lady, I will," one of his loudmouth drinking buddies offered. Casi kept her eyes on Steve. Don't make this tougher on me than it has to be, she prayed silently to him.

With a quirky smile that she would come to treasure, Steve stood, took the offered hand, turned it over and kissed its palm. Casi went weak in the knees. "Tell me," he asked her, eyebrows raised over her hand, "are you the kind of woman who likes to live as far out on a limb as I do?"

Casi glanced down at herself and laughed. "Looks that way to me." Then Steve took her in his arms and led her to the dance floor. Casi knew she'd remember this moment for the rest of her life.

And from that wonderful moment, Casi drew the strength to take a breath and calm her terror. The door was there, across the room. She could always walk out on this . . . whatever. She did not have to make everything perfect in just this moment in time. Casi shook her head, letting the feather boa tickle the old, dry skin at her neck. "There are some memories that are too precious to

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ever part with."

The stranger nodded, using more of his body than a human would need. There were more red tones under his makeup. "I know what I am going to say will seem lacking in heart, but please take it in the rational manner it is intended. You are old. You have already outlived so many of the friends of your youth. You have outlived your husband. Soon, you will be dead. In the cold clay of the grave, your memories will be lost. I am offering you a chance to not only keep yourself alive, but to keep your memories warm among many of our young as they scatter across the stars."

Casi listened to the stranger's words, then played them over again in her memory. She heard only sincerity and cold, rational logic. Steve would have liked this fellow. Oh, Steve, I miss you. What would you do?

Negotiate, just like you do so well, came to her. Neither she nor Steve had ever taken any situation at face value. She'd done her best to bargain freedom out of their jailer when an assignment went sour in Central America. Their hands already tied to stakes, their love about to come to a very melodramatic end, Steve still negotiated with the head of the firing squad over whether or not he and Casi needed a blindfold. Then a Marine chopper buzzed the field and the firing squad took it in their heads to go elsewhere—fast.

"There are some memories that make me who I am. I can't picture myself without them and still be me." Casi put down her marker, then quickly offered her compromise. "Sure, there are plenty of memories I'll be only to happy to share with your young. I think they'll be quite educational. However, I can't see that a handful of intimate personal memories would be all that important to your youth."

"We will have to be the ones to decide what is appropriate for our young."

"You really want them joyriding through the more pornographic moments of my life?" Casi shot back. The stranger across from her now was turning colors ranging from purple to puce.

"I can assure you that we will ask you to share with them only what we consider appropriate. Still, some of your most intimate memories are mingled with what it means to truly love another. Surely you would not object to our young learning that from you."

Once again, the stranger was pushing Casi further than she would go. "I will never give up my memories of Steve," she said with finality.

The stranger across from her now showed a skin that was as pale as the makeup. "I am afraid that you will have no choice."

"We always have choices," Casi said, putting into her words the deadly calm that had gotten her across more than one illegal border.

The stranger let Casi's words hang in the air for a long minute. Finally, he rested both his hands on the table. "If it were in my control, I would never ask you to give up what you do not want to. Please understand, this machine we use only offers you one choice." The stranger, still deathly white, spoke on in a rush of words. "Early on, we discovered two fatal side effects to this gift. If we took our teachers' memories too quickly, they did not have time to form another set of memories to replace them, to hang basic, critical skills on. Teachers forget how to walk, to talk, to eat. We quickly learned not to kill those whose memories we valued in that way by harvesting their memories slowly, over time, so they could form new memories.

"The second problem was harder to recognize," the stranger sighed. It came out more like a wheeze. "Early teachers became confused, lost, disoriented. At times, fatally so. It took us many years to discover what was wrong. Do you remember old vinyl records, Mrs. Shepherd?"

"Yes."

"Do you remember some getting

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scratched so that the needle jumped from one groove to another, maybe several grooves down the record?"

Casi nodded.

"Ever have a record so badly damaged that it would skip from the beginning of one song to the middle of another to the ending of a third, giving you only a few jumbled words from each?"

"I never had one as bad as that."

"Would you want to listen to such a record? Would you want such a record as that going on and on in your head?"

Casi got the point.

The stranger looked across the table at her with unblinking eyes. "I will not tell you what you must do, but I tell you this. We would never harm those who have shared with us experiences that we have come to treasure. If you come with us, we will take memories from you slowly, over the next ten of your years, for our young. We will give you treatments that will restore your brain to its young state, ready to experience so much more, to remember so many other people and events. At the end of that time, if you wish to live, you will choose to have us flush from you all your old memories, lest they tear your mind apart."

Nice to know they valued their teachers, Casi said to herself. Still, things were moving way too fast. One thing was sure; this offer would come only once. And taken, there was no turning back. There'd be no marines where she was going.

"You hold memories from many different lives, species," Casi pointed out, trying to slow things down. "Why doesn't it drive you mad?"

The stranger chuckled as his skin began to flush blue beneath the makeup. "You are a fast one. I would love to taste what made you the way you are. Yes, my species has learned to . . . you would say compartmentalize . . . our different experiences. Those we have lived and those that have been shared with us. Some of your species living among us have also learned this skill. But none in less than a thousand of your years. You will have to flush your memories of this life long before you can learn to hold on to them."

Casi took a deep breath, trying hard to absorb all the stranger had dumped on her. Part of her was scared, ready to hobble back to the elder care, wait for the darkness and see if Steve was there for her on the other side. Still, living this way was hell for someone who'd always leaped before she looked. For so long she'd been old, frail, skirting risks, nursing her experience to save her from a fall, a break, an illness. It would be so wonderful to be young again. To laugh at a tumble! To afford a blunder, knowing she'd have the time and resources to make herself whole again. Casi remembered putting on the red chemise, taking the risk that changed her life forever.

The stranger glanced at the Budweiser clock over the bar. "In ten minutes, it will be time for bed check. If you are going back, you will want to be back by then. Let me offer you this." The stranger produced a small, flat, yellow tablet; Casi wasn't sure where it come from. Maybe she blinked at the wrong time. "Please place this under your tongue, Mrs. Shepherd."

Casi reached for it, rolled it over in her fingers. It felt smooth, cool. The eighty-five-year-old in her wanted a full explanation. She never took a pill without the doc showing her the full pharmacological report on it. But the gal in the red chemise was also in there; she took over. Quickly Casi slipped it under her tongue, held it there as her mouth began to water. In a moment, it had dissolved.

"What have I taken?"

"Something that is not all that far ahead of your own people, though what it is doing to you is only a gleam in some doctor's eye. You call it nanotechnology. You have just released several million tiny robots into your system." The stranger glanced at the clock. Maybe half a minute had gone by since Casi put the pill into her mouth. They watched together as the second hand completed

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the rest of its circuit.

"How do you feel?" the stranger asked.

"Fine."

"How fine?"

A tart rejoinder was on Casi's lips, but she swallowed it and did a quick check of just how she felt. Then, as the second hand continued its sweep around the clock's face, she did a very methodical examination of her entire body.

The aches in her fingers were gone. Her hip felt normal for the first time since that skiing accident. The dull ache in her back that she'd just had to learn to live with was AWOL, and welcome to it. Her vision, however, was going worse. She took off her glasses and rubbed her eyes. When she opened them again, the bar stood out with a clarity she couldn't remember. There were whirls and knots in the pine paneling. She glanced toward the door; the barmaid was laughing, crow's-feet showing clearly around her eyes. Casi added a good ten years to her estimate of the woman's age.

"What have you done to me?"

"Does it not meet with your approval?" the stranger asked with a smile and a deep blue skin tone.

"Yes, very much, but what is it?"

"The first step that in a year and a half will give you back the body of your youth. Or, if you prefer, a bit of help to get you back to your elder care ahead of bed check. Be sure to take your cane. You may not need it now, but in a week, two at the most, you will." The stranger slipped from the chair and came to his full four feet of height.

"My ride will be picking me up on the beach. I can walk you there, or if that is not your wish, I can walk you that far back to your . . ."

"Unit," Casi finished. She would not call it home.

Folding her glasses into her pocket and flinging the longer end of the boa over her shoulder, Casi collected her cane and accompanied the stranger from the bar. No one paid any attention to the strange couple as they stepped from the shady dark into the glare of the foyer. To Casi's right, colored lights raced around the perimeter of a sign, advertising the coming shows of groups that had all been the rage for Beth's generation and reminding Casi that Glenn Miller didn't make it back from the war, and the Duke and Benny Goodman were dead now.

"To every thing, there is a season," Casi muttered.

"You would be surprised how many intelligent species have the same saying."

"I doubt it."

"Oh, how I would love to taste what makes you you. To share the stars with you. Strange, it was your generation that began the journey to the stars for your species. I would have thought that you would be one of those that longed for the touch of space."

Casi grabbed her escort by his arm—there was no elbow in there—and swung him around. Part of her noted there seemed to be two somethings in that sleeve. Most of her was in her hot reply. "I watched Glenn go up the first time. Steve and I dropped everything to be there the day Apollo 11 launched. I forgot to breathe until they cleared the tower. And Steve and I danced across the floor when Tranquility Base finally reported in. Steve and I would have given our right arms to be on one of those rockets."

The stranger removed his arm and continued for the casinos's glass doors with his rolling, bowlegged gait. "I'll let you keep your arm," he called over his shoulder. "All I want are your memories."

Casi hurried to catch up with him . . . and found she'd forgotten how great it felt to stride along with a skip in her step. She almost tossed the cane. But it wouldn't do to come prancing into the assisted living home without it. She'd probably spend the next week tied down to her bed as "protection" from doing herself harm. God, how I hate that place.

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Then why go back? Stranger here is offering to take away the bum hip and give you the stars to skip across!

But to give up everything and everyone I've ever known. Not just to give them up but to lose them completely, as if they'd never lived.

And in a year or two, when you're dead and gone, what more will your girls have to remember you and Steve by but their memories and the memoirs on your hard drive?

Casi fingered the letter in her coat pocket. She'd written it to Beth and Elie, telling them not to worry; she was going away with some friends and might not write again for some time. If she dropped her coat, it and the letters would be found in the morning.

"I remember rereading my memoirs before I emailed them to you. You still have a copy of them?" she asked the stranger.

"Yes, they make fine reading."

"I wonder if the memory of a memory is as good as the real thing?"

The stranger did not slow down, but his skin was again blue. "Many of our teachers say that their memoirs help them stay . . . you would say . . . human."

"I'd want to add a lot to them if they were all that I'd ever remembered." Casi nodded. "Were you ever in my room at the Stalag?"

"Our sensors were there for us."

Casi wondered if she'd shared her shower with their bugs, then ignored the question. It was a sad Peeping Tom who cared about the wreck her body was now. "I've started painting again. Had to argue loud and long to get to hang a few of my water colors on my room's walls. I sometimes think my sketches of Steve are more true to life than any picture."

"Art can often add what a machine cannot see," the stranger agreed.

Casi had to grin as she rambled across the parking lot, balanced on her own two legs and nothing else. Halfway across the lot, the air changed. The huge pumps of the casino blasted out tons of air, struggling to keep the smoke from overpowering the paying customers. For a thousand feet around, the air stank with a characterless blend of cigarette smoke and food and human presence that might as well have been downtown New York.

Now the Pacific Ocean roared in Casi's ears, and the salty tang of it caressed her nose. She'd smelled the ocean on her walk over here, but that nose had eighty-five years of sniffing on it. Casi savored the salty tang as she had when she was ten. It was a kick beyond words.

"Hey, what does starship air taste like?"

"Not like that," the stranger said, pointing behind him. "Common areas have to be fairly neutral, say, like a forest morning. What you do with your own quarters is your own business."

"And I can paint?"

"I've already set up a studio for you. Those of us who've read your memoirs can't wait to see your rendering of Steve at the dance."

Ahead of her, the tide was out. The wind had softened to a hush. A full Moon highlighted sparkling diamonds on the crest of every wave. The stranger began to shed his clothes. There were two arms, or tentacles, in each shirt sleeve and pants leg. His species must have started the evolutionary race closer to an octopus than a rat.

The Belt of Orion sprouted a fourth star. As it grew larger, she heard Steve whisper, "Go for it, my darling daredevil."

The cane flew across the sand as far as she could toss it.

The buttons of her coat gave way to fingers that flew once more. Her coat quickly fell to rest on a rock of the seawall. Now Casi began a dance to the ocean.

Her blouse fell to the sand before she reached the water's edge. Her skirt came off as she skipped across the ebbing tide. The feather boa tickled bare breasts as Casi threw herself again into life's wondrous adventure.

She was laughing, even before the light took her. ■

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THE REFERENCE LIBRARY Tom Easton

The Dark Wing, Walter H. Hunt, TOR, $27.95, 491 pp. (ISBN: 0-765-30113-X).

Counting Coup, Jack Dann, Forge (TOR), $24.95, 307 pp. (ISBN: 0-765-30185-7).

I Dare, Sharon Lee and Steve Miller, Meisha Merlin, $16, 469 pp. (ISBN: 1-892-065-03-7).

Expatria, Keith Brooke, Wildside, $15.99, 177 pp. (ISBN: 1-58715-331-9).

Writers Anonymous, Kori Agurrie-Amador, Quiet Vision Publishing, $9.99, 102 pp. (ISBN: 1-57646-580-2).

Gödel: A Life of Logic, John L. Casti and Werner DePauli, Perseus, $16.50, 210 + viii pp. (ISBN: 0-7382-0518-4).

Impact Parameter and Other Quantum Realities, Geoffrey A. Landis, Golden Gryphon, $24.95, 340 pp. (ISBN: 1-930846-06-1).

Hardyware: The Art of David A. Hardy, text by Chris Morgan, Collins & Brown, $29.95, 128 pp. (ISBN: 1-85585-917-3).

Tales of the Velvet Comet, Mike Resnick, Farthest Star, $19.50, 400 pp. (ISBN: 1-57090-164-3).

It is still September 2001 as I write this. The nation is recovering from the terrorist attacks on the World Trade Center and the Pentagon and vowing "Infinite Revenge." Perhaps by the time you read this, that revenge will have been achieved and those responsible will have been brought to justice. I hope so.

A book-review column is no place to reflect on such things at length unless they can be linked to a book. But I can do just that, for in the wake of the catastrophe, there has been an enormous amount of pontificating, ranting, and calls to arms. There have also been calls for caution, for taking care that when we go to war we do so against the right parties and do not slaughter innocents. There have been cries that we need to strengthen the nation's security by increasing surveillance, banning or restricting encryption, and otherwise impinging on traditional American freedoms. There have also been cries that if we surrender freedoms, the terrorists win in a way they could not have dreamed.

And there have been claims that where in the recent past—Iraq, Bosnia, Kosovo—we have in the name of humanity warred with one hand tied behind our backs, afraid to lose our own soldiers, afraid to strike to the heart, afraid to win, we must now go all out. We must not leave the terrorists able to strike again.

And here is where the book—Walter H. Hunt's **The Dark Wing**—comes in. Hunt could not have dreamed that his work would be topical, but just as events can make a story instantly obsolete, they can also make one relevant, even if the scene is a galactic stage,

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where a human empire has spread among the stars.

Hunt's humans are not alone. They have met several alien species, one of which, the zor, has attacked from the start. The zor's first strike destroyed an entire world and created considerable enmity. Humans won the first war and agreed to a peace treaty, which was promptly broken. Humans won again, agreed to a new treaty, and that too was broken. The zor seem to think of treaties as time-outs for regrouping, never as an end to hostilities.

The novel opens in the Pergamum system, where Sergei Torrijos is Captain of the *Lancaster*. Numerous other ships are present as well, but when the zor fleet erupts into space, they are enough only to ensure that though the bulk of the human fleet is destroyed, the zor are annihilated. Soon thereafter, the Imperial fleet has a new admiral, Ivan Hector Charles, Lord Marais. Marais is something of a scholar, and he has studied the zor, even traveling to their worlds and learning their language. He has written a book, propounding that the zor see humans as having no place in their cosmology and therefore believe that they must be exterminated. The only answer is to fight their way, to destroy their ability to strike back even if it means their utter extinction. And the Emperor has put him in charge. Sergei becomes his second, his ship the flagship.

You can see the parallel. Terrorism rooted in religion or worldview. Call it jihad and you are not wrong. A history of fighting humanely. And finally a provocation sufficient to warrant a "final solution."

And off goes Admiral Marais, his strangely hostile aide, Captain Stone, at his shoulder, to gather a fleet and venture into zor space, there to depopulate worlds.

Not surprisingly, the word gets back to Earth, where politicians and bleeding hearts cry "Foul!" But the navy's people flock to Marais's banner. His fleet grows. And when the Emperor sends an order to cease and desist—to permit talks with the zor envoy who is already requesting yet another treaty—Marais ignores the order. He moves further into zor space, strikes again, and again. And he finds something curious in intercepted zor despatches: Humans have entered the zor cosmology after all; Marais is being identified as the "Dark Wing," a force of destruction. And now he feels that he must more than ever act the part.

"Horrors!" cry the folks back home. "He's off his nut! And what if he wins! He's sure to turn the fleet around and depose the Emperor!"

Well, maybe. Meanwhile, Captain Stone has quite impossibly vanished, leaving clues that a third party is involved. And the zor leader has dreamed of a way to resolve matters short of extermination or mass suicide. He invites Marais to the homeworld, redefines several matters, and sends Marais home with allies at his back.

I find it very difficult to imagine that the parallel with recent real-world history continues much past what I described above. Marais achieves a quite benign resolution, a "final solution" that is a true peace, with everyone much better off than they were. The closest we might come here and now might hinge on remembering what we did after World War II, when we generously lifted our recent foes back onto their feet and wound up with friends and allies and a much stronger economy. Yet I doubt that we can be that generous again.

Hunt's space navy is a bit too much Hornblower in style to be totally convincing, but *The Dark Wing* is still well worth your attention. It's perfectly readable, and its resonance with current events makes it quite thought-provoking.

Jack Dann's **Counting Coup** is neither science fiction nor fantasy. If it has

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to have a label, call it "magic realism," but it isn't even that, really. What it is, is Jack Dann—known to the SF community as a novelist and anthologist of repute—telling us it is never too late to do it right. His hero is emphysematic Charlie Sarris, who in his 60 years has had businesses and lost them, had money and thrown it away on booze and women, had parents and wife and family and either abandoned or alienated them all. He's a failure. He knows it despite the memories he keeps carefully glossed. And never mind the much younger wife who has given him daughters. He can't give her what she deserves, she calls him a selfish sonofabitch, and one of those daughters has gone and got herself knocked up by that little twit, Joey.

So he slugs Joey, slaps his wife, and full of failure, heads for the basement apartment where dwells his friend John Stone, another old fart of a failure, but an old fart with a peace pipe and a medicine bag and memories of being an important medicine man. But he too has screwed up, and as soon as a sweat lodge ceremony goes dreadfully wrong, the two friends are off in a stolen car, drinking desperately, weaving all over the road, bouncing off guardrails, and searching for something resembling redemption.

I gloss outrageously. Dann spends time introducing Charlie and John and letting Charlie discover that John's pipe and medicine can offer Charlie a kind of peace he has never known. They are drawn together, and when John invites Charlie to a sweat, Charlie goes along. But the sweat is being run by Joe Whiteshirt, an old foe of John's, whose antipathy sours the ceremony and even—if Charlie can believe his eyes—takes malignant form and tries to kill John. They get away, John admits that his enemy is in a sense his own doing and that if anything is to be done about it, it is up to him.

That's when Charlie erupts at home and walks out, feeling that he cannot return. He throws rocks through his boss's office door. And then, all bridges thoroughly torched, he and John hit the road. Several stolen cars and liquor store heists later, they are on a Florida beach, staring at a drug smuggler's abandoned airplane. It's got gas, and Charlie thinks he remembers enough from his long-gone flying experience to get it into the air. And so he does, though with two drunks clawing at the controls it isn't long before it's on the ground again, wingless but still roaring down the sand straight toward the plush retirement estate of Charlie's boss's dad. One more stolen car later, they are on the road again, heading for Joe Whiteshirt's home base for a final confrontation and perhaps that redemption both Charlie and John need so badly.

If there's magic in this tale, it's the magic of medicine, both good and bad, working its way upon the characters. There is also the magic of a master storyteller, working its way upon the reader. This one is well worth your attention.

When I reviewed Sharon Lee's and Steve Miller's Liaden novella *Changeling* last December, I said that I thought that tale of a pilot betrayed by clan rivalries, stripped of clan-membership, and cast out of society to die—but rescued for his piloting skills by a Master Pilot of Clan Korval—must be but the beginning of something larger. And so it was. Ren Zel returns in **I Dare**, in which the notorious Department of the Interior moves to tighten its grip on the world of Liad. Only Clan Korval has stood in its way, but now Korval is on the run (see *Plan B*, reviewed here in October 1999), its people and its ships in hiding. Only one representative of the clan remains on Liad, and she is under attack. Meanwhile, Val Con and his lifemate Miri are mustering their forces after the battle that chased the invading Yxtrang away from Miri's homeworld, and those forces include a few captured Yxtrang

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warriors and a brace of ancient Turtles. Meanwhile, the Department of the Interior has counterfeited the ring that identifies the Korval clan chief and offered it, along with assurance that all other contenders for the clan headship are dead, to the one member of the clan it thinks it might be able to subvert—the wastrel, gambling, ne'er-do-well Pat Rin.

Unfortunately, Pat Rin is of Korval. He recognizes the counterfeit, destroys the Department's emissaries, and runs with new allies to build a force that can return and avenge the deaths he believes the Department is responsible for.

Of course, Pat Rin's kin are hardly dead. They too are arranging to carry the battle home to Liad, and with them is a Ren Zel who is displaying a quite astonishing talent for long-distance romance. Timing will be everything, and Sharon and Steve do a grand job of bringing everyone involved on stage at just the right moment for a rousing finale.

Their fans will be delighted. They will also be happy to read in the Afterword that "there are always more stories waiting to find the page." Perhaps some of those stories will follow Korval in new directions.

Keith Brooke's **Expatria** gives us the title world, settled generations ago by folks from Earth. In Newest Delhi, the remnants of the old technology have been spurned, and when Mathias Hanrahan, the young and restless son of the local ruler or Prime, cobbles together a PA system because, he thinks, the people will love it, he causes a riot. The voices of hidebound conservatives, led by religious sects, are far stronger than reason. And Daddy Prime seems much more interested in listening to those voices than to his son. Mathias is in disgrace, and he doesn't help matters when he and friends sneak into the temple of his fiancee's cult and get caught.

When the Prime is murdered, Mathias's smarmy half-brother is only too pleased to accuse Mathias. Fortunately he has friends who can sneak him out of jail and onto a boat to the realm of Orlyons, where he can grow up a bit before moving on to Alabama City. There the old technology has some respect, and a functionary named Sukui is busily collecting remnants and supervising the efforts of a corps of would-be scientists and technologists to make the gadgets work again. Mathias winds up working on radio, and he is as astounded as anyone when they pick up signals from space: the old colony ships are still in orbit, inhabited by the descendants of folks who did not want to land, and they have themselves picked up signals from a ship on its way from Earth. Change is coming willy-nilly, and the Expatrians had better get their act together and decide how to meet it. Unfortunately, Mathias's half-brother is warring across the region, and Mathias is hardly the one to tell him to stop and listen.

What he can do is try to stop the war from wrecking Alabama City by returning freely to cell and trial and sentence in Newest Delhi. And then . . .

I'll say no more. Brooke has talent, and this novel is promising. Its greatest problem is that Mathias does not seem a real product of his setting; the author's hand is too visible as it moves the pieces on the board.

Kori Agurrie-Amador has spent much too much time around writer's workshops, where cliché-ridden stories are common and would-be authors suffer so greatly from Writer's Ego that it is unthinkable that they make the sort of fundamental changes their stories need. Their poor, unmotivated, jerked-about characters really should rebel and take matters into their own hands. They certainly couldn't do any worse!

And so we get **Writers Anonymous**, which begins not with "It was a Dark and Stormy night" but with "It was a time of Myth and Legend," almost as bad, and quickly confronts a questing

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warrior, strong of thews and short of trews, with a dragon to slay and a princess to rescue (he loves her, of course, but he just can't remember ever actually meeting her!).

A quick jump cut takes us to the WA meeting, where Our Hero's author stands up to say, "Hi, my name's Bob, and I'm a writer." Before long, Bob is trussed like a turkey and his own villain—having escaped the story through a gigantic hole in the plot, has taken over the word processor to fulfill his maniacal dream of ruling the world . . .

Yes, the dot-dot-dot there is deliberate. It's just one of the trite devices mocked by this amusing tale. The publisher writes me that they "thought young readers—junior high and high school—would like it," and they are surely right. But another audience is writers and would-be writers, some of whom may well recognize themselves—past or present—in the tale.

On September 7, 1930, Kurt Gödel announced his startling conclusion that not everything that is true within a self-consistent arithmetical system can be shown to be true. This quite upset philosophers and mathematicians who had been sure that no such thing could possibly be true, but a great deal of work in the last seven decades has confirmed and extended the idea: There are indeed truths we cannot know are true.

If you wish to learn how Gödel came up with his famous theorem, get a copy of **Gödel: A Life of Logic**. John L. Casti and Werner DePauli have done an excellent job of portraying Gödel's European background, the Vienna Circle of mathematicians and philosophers who influenced him, the thought process that Gödel followed, and the many ways his theorem has affected modern thought.

Gödel's theorem has even affected the argument over whether it will ever be possible to build a computer that can mimic full human intelligence, but fortunately, say Casti and DePauli, its restriction may not apply. Consistency is a prerequisite for the theorem, and humans are hardly consistent!

They didn't say this, but perhaps we should: The human mind may not be as simple as a single system, self-consistent or not. It may instead be a multitude of systems, any of which can be turned on the rest to view them from the outside, so to speak. This too should render the theorem inapplicable, at least in this context.

In his Foreword, Joe Haldeman calls Geoffrey A. Landis one of the best hard SF writers in action today. To see what Joe means—if you haven't read *Mars Crossing* (reviewed here in January 2001)—pick up a copy of **Impact Parameter and Other Quantum Realities**, where you will find a marooned astronaut who survives till rescue by hiking around the Moon ("A Walk in the Sun") and a close approach to a black hole ("Approaching Perimelasma"), as well as the sly humor of "What We Really Do at NASA" and a baker's dozen more, including a couple that first appeared in this magazine.

It should come as no surprise to learn that Landis has a background in physics and really does work for NASA. He even had an experiment attached to Sojourner, that flat-topped little Mars robot. And that hard SF is only part of his act. There are of course technical papers—over 240 according to his web page. But there is also mainstream, slipstream, fantasy, and poetry, all with a very human touch.

In his Foreword, Stephen Baxter calls the artwork of David A. Hardy luminous, and there is perhaps no better word. Painting after painting—book and magazine covers, albums, advertisements, gallery art—presented in **Hardyware: The Art of David A. Hardy** glows with light. Not surprisingly for an artist voted "Best European SF Graphic Artist," most of his works are also visually interesting,

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standing up well to prolonged examination. Chris Morgan's text covers the Hardy life and half-century career and nicely tracks the transition from brush to computer, which makes possible a multitude of luminous effects.

This one is worth adding to anyone's collection of SF and astronomy art books.

NOTABLE REISSUES

A decade and a half ago, Mike Resnick's "Tales of the Velvet Comet" series appeared. I reviewed *Eros Ascending* in May 1984, *Eros at Zenith* in September 1984, *Eros Descending* in December 1985, and *Eros at Nadir* in October 1986. The Velvet Comet is Resnick's brothel in the sky, where all good men and women can go for the weekend when they make their pile. It's luxe de luxe, most elegant of sinning, and it's exclusive. *Ascending* set the scene and identified Mike as a cynical romantic. In *Zenith*, a murder mystery, Mike laid out a lesson for his students: the most worthy of people (here, the madam) have some firm sense of commitment or dedication, a love of something beyond self. In *Descending*, Mike confronted extravagant sinning with religious intolerance and highlighted the ambiguity of morality. In *Nadir*, his theme is the writer's life. The Velvet Comet is abandoned, doomed to be turned into a housing for plebeian business offices. But a writer has come to glorify its past, and as Nate Page struggles with truth versus lucrative froth, he lets Mike say that money is not enough, no matter how much the end result appeals to the masses. There must be something more, something the writer wishes to say to his or her audience, or the job is only an exercise in futility.

For all its worldly focus, and all the appeal of the individual stories as stories, the series as a whole marks an interestingly reflective segment of a writer's career. And now it's available in a single omnibus volume, **Tales of the Velvet Comet**, with a foreword by Josepha Sherman. You'll enjoy it. ■

Chat online
with your favorite authors!

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Meet our Nebula Finalists — **April 23 @ 9:00 P.M. EST**

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BRASS TACKS

Dear Dr. Schmidt,

I had to check the covers of the most recent two issues to make sure I was actually reading *Analog*. After all, "Club Masquerade" and "The Great Miracle" are neither science fiction nor fact; they are both fantasy. And since "First Contact National Monument" has neither plot nor point, I wondered at times if I was reading that other magazine that frequently publishes fantasy and stories with neither plot nor point.

Don't worry: I'm still a gruntled reader and have no intention of canceling my subscription. I enjoyed "The Alternate View" on Buckytubes, which have interested me as long as I have known about them, and do hold great promise once we figure out how to make them long enough.

Jeff Carter

I'm sorry you don't consider those stories science fiction, but a case can be made for them either way. If we never included anything in the "borderline" region, the borders would have a tendency to shrink until they were dangerously constrictive. So we need to test them from time to time. (And I, for one, wouldn't agree that "First Contact National Monument" had neither plot nor point, because I saw both. I'm only sorry the author can no longer answer you himself.)

Dear Dr. Schmidt,

In his piece on meteorites in December's edition, George W. Harper gives the impression that colour photometry is the primary means by which astronomers determine the Martian origin of samples.

He points out the shortcomings of the technique and uses these to introduce a level of uncertainty sufficient to allow for the samples to have had their origin on earth.

His reasoning seems sound but ignores the chemical and microscopic analysis routinely carried out on meteorites of interest.

I've read that the gas trapped in glassy pockets within three of the nineteen or so candidate samples was found to closely match that of Martian atmospheric samples taken by Viking.

This gives a much higher level of certainty for the meteorites origin than the article allows.

As for the use of photometry—weren't most Martian meteorites ejected from below the surface and don't they vary considerably in colour?

I have no problem with the Earth origin hypothesis for some meteorites, having come across it before. There could well be many such cases. However, the claim that the Martian meteorites, with their tantalising signs of life, originated on Earth seems to depend upon a spurious argument.

Bob Brooks

Dear Stan,

The December science-fact article, "Meteorites: Those Odd Little Rocks" contains a few odd little physics errors. An asteroid "plunging straight toward the Sun" at 42.4 km/s, colliding with Earth, traveling 30 km/s in a near-circular orbit about the Sun, would have a velocity in an Earth-fixed reference frame of the square root of $42.4^2 + 30^2 = 52$ km/s, not 72 km/s. Velocities add as vectors, not scalars, and these two velocities are near-

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ly perpendicular. This complaint is admittedly a bit pedantic, since a gravitational perturbation passing by Jupiter on the way in could be enough to deviate the asteroid from its "straight for the Sun" path and arrange for a head-on collision.

But there's no getting around conservation of energy. Earth's gravitational potential well imparts an additional 63 megajoules/kg of energy to the object, which is *not* the same as 11.2 km/s unless the object starts from rest—which the hurtling asteroid obviously does not. Energy depends on v^2, so it doesn't take a big increase in velocity to add a lot of energy when an object is already moving fast. A gain of 63 megajoules/kg starting from a speed of 52 km/s only adds about 1.2 km/s to the projectile's velocity. Accelerating a body from 52 km/s to 63 km/s would require ten times as much energy as Earth's gravitational field can provide.

All told this object hits Earth at a speed between 53 km/s and 72 km/s, depending on whether it's diverted by Jupiter or not. Either way, it's well below Harper's result of 84.6 km/s. None of this makes much difference to Harper's conclusions, which were mainly based on impacts in the 16-21 km/s range. But if you're gonna do the physics details in a forum like *Analog*, you should do them right.

Frank Morgan

The author replies . . .

Mixed *mea culpas* here. With respect to the first objection, I did take into account third body perturbations as a means of increasing the collisional speed. I failed to mention it because it wasn't central to my presentation. I didn't go into the values of extrasolar system speeds either, and for the same reason.

As for the more critical objection, I can offer no excuse. I know better, but obviously I omitted making the final conversion. I suspect I was too busy thinking how to get the meat of my paper to reflect on the introductory portion.

I promise to do better in the future.

George W. Harper

Dear Dr. Schmidt,

I enjoyed John G. Cramer's article on carbon nanotubes in *Analog*, December 2001. However, his suggestion that carbon nanotubes could be used as orbiting skyhooks may be flawed because of the Earth's voltage gradient. A few years ago NASA's tethered satellite experiment ended in a great flash due to that voltage gradient.

Rick Smith

The author replies . . .

Mr. Smith raises an interesting point. When a conducting space tether, of which a "skyhook" link from ground to geosynchronous orbit might be an example, cuts through the lines of force of the Earth's magnetic field, a large electric potential may be induced and a significant current flow may occur that can (and in one case did) destroy the tether.

However, a tether that connects to geosynchronous orbit should not cut through magnetic field lines unless the Earth's magnetic field itself shifts, so the induced potential should be small. Also, there is no particular reason why a skyhook tether needs to be a conductor rather than an insulator or alternating insulators and conductors. And as I pointed out in my column, one can construct nanotubes that are either excellent conductors or semiconductors.

I would think that a more serious problem than the field-induced currents might be the effects of weather, and particularly of electrical storms. A skyhook tether would probably have to function as a lightning rod. Therefore, at least the lower part of the skyhook would probably have to be a good and well-grounded conductor studded with sharp points that would release corona discharges into the passing clouds.

John Cramer

Stan,

I sent you a story recently which you

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rejected. I don't really have a problem with that. I have never written anything before so I was not surprised. For me, the learning curve is still steep. Even after I sent the manuscript, I continued to work on the draft and found a number of errors, as well as things that I felt would be better redone.

My issue (no pun intended) is with the writing guidelines returned with the manuscript. They were similar to what is on the web site, but more in-depth and specific. I realize my manuscript was likely substandard in other ways, but what I *didn't* know until I received your more in-depth writer's guidelines was:

Analog prefers:

* Stories which feature science and problem solving as an integral part of the story—not just for the creation of a venue.

* Avoidance of cliches like time travel paradoxes.

* A positive resolution, or at least the protagonists going down swinging.

In these three ways, despite whatever other shortcomings it may have had, my story did not meet your criteria. I know you are busy, so I would not have wasted your time had I known, and instead maybe have sent it to *Asimov's*. (You're probably thinking "I remember your story. *Asimov's* would have rejected it too." LOL.)

I have a suggestion, an opinion, and a question.

The suggestion is to post your writer's guidelines in their entirety on the web site. The web site says "There are no hard and fast rules," but clearly there are strong preferences according to the guidelines I got back in the mail. A writer knowing these has the option of tailoring a story to your preferences and avoid your dislikes, or submitting the story elsewhere.

I can't argue with your success, but in my opinion, the major draw of SF is—from when I was a kid growing up, until now (at age 41)—the combination of speculative science *and* the fantastic. Much of the old school traditional science fiction contained an element of the fantastic. Although SF stories can be practical and visionary, their primary purpose is to provide entertainment and fun. I think if you stick absolutely to "Hard SF," many story premises are locked into too small a box. I will take a little "not so perfect" science, *if* it makes for a well-paced, internally consistent story. Much science in golden age stories and movies was wishy-washy, but the premises were very entertaining. How else can you get Earth invasions, strange carnivorous alien creatures, interstellar battles, giant spiders, blobs, BEM's and the like? I love and embrace them all. They were the core of SF. Can we no longer do these? Although it is in the past, I think the golden age is aptly named, and many of our very best stories are from that period or immediately following (pre-new wave).

I think the challenge writers face today is that so much has already been done, and a unique twist is hard to come by. If you stick rigidly to hard SF, it is even more difficult. A writer has to hammer out some plausible idea, then work his premise to stay within set boundaries. To me, it seems a little too restrictive and can come across as labored. Working the edge of the envelope can make for an admittedly less plausible story, but it might be more entertaining. I suggest that if an SF story contains a couple of borderline highly improbables, but the rest is OK, then fine. A little fudging beyond known science (FTL, time travel, and all of the other classic cliche plot devices) is OK in order to create a venue for the fantastic. The ends justify the means, as they say. We have to find a way to arrive at our venue, before all of the fun starts. As long as it is not total and complete BS, I am willing to go along for the ride if the story holds my interest. You may be thinking "Go read *Asimov's*, then." Well I do, and they have some fine stories, just like you. I subscribe to *Analog*, though. The thing I don't like about *Asimov's* is they commonly publish things which are barely SF. Often, there is a

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broader social statement involved. *Boring.* I want to read intelligent stories in the tradition of Campbell's "Who Goes There?" I want well-crafted but fun stories involving menacing alien civilizations, BEM's, time-travel paradoxes, sinister plots, monsters that eat entire cities (or planets, for that matter). I want SF stories right out of "The Twilight Zone" and "The Outer Limits." I want stories that are entertaining, imaginative, scary, make you wonder, or feel insecure when you look up at the stars at night. Where can I find these? If I write them, who will publish them?

Gil Gregg

Your letter is a good one, but it provides its own best answer to why I don't make the guidelines even more specific. The more specifically I try to spell out what I do and don't want, the more people will try to "tailor a story to my preferences or submit their stories elsewhere." That's exactly what I don't want! You're assuming far too narrow a view of what I want, and I already meet too many people not submitting stories that they should because they're doing the same thing. I'd much rather see you and everybody else write what you really want to write, and submit it to me if you think there's any chance at all that it might work in Analog. *If you're* sure *it's wrong for us, by all means send it elsewhere; but if you have the slightest doubt, please let me decide!*

The "guidelines" you talk about are really two separate things. The ones we call guidelines are the ones on the website, and on a separate sheet we sometimes send on request or include with returned submissions from people we're not sure have seen them before. Those are mostly about very basic things like manuscript format, submission protocol, and an extremely broad and general definition of what we mean by "science fiction." You really do need to follow all of those to have much of a chance here.

The more specific things you mention, like time-travel clichés and downbeat endings, are from another sheet that we send back with the sizable majority of submissions on which we simply don't have time to comment specifically. They're things that often bother us about stories, but they aren't necessarily fatal errors. Some of the most memorable stories ever written violate some of those suggestions and get away with it because of the writer's skill or some fresh insight. But it's a good idea for beginning writers to know that we've seen those things so often that it will take something special to breathe fresh life into them.

I completely agree that a major draw of science fiction is the combination of speculative science and the fantastic. Fantastic things are fun, but a guiding principle of Analog *is that there's something* extra *special about a story that is not only fantastic but at least marginally plausible. This does not mean that a story for us needs to stick strictly to what we already know is possible; indeed, if all our stories did that, our vision of the future would almost certainly be grossly unrealistic in a very important sense. (I've written extensively about this elsewhere; see, for example, several of the essays in* Which Way to the Future? *[Tor Books, 2001.) Nor does it mean that nobody should write stories that make absolutely no attempt to be plausible; yes, they can be entertaining, too.*

But they don't have that special combination of fantastic yet just-maybe-possible. Yes, that does make it harder for writers, but extra rewarding for those who can pull it off. Since hardly any other publisher is making much effort to provide that, and people count on us to, we shall continue to concentrate most of our efforts there. But that's still an enormously broad field: it includes everything that's possible, plus a whole lot more that will eventually turn out not to be, but hasn't yet! ■

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UPCOMING EVENTS Anthony Lewis

25–28 April
NEBULA AWARDS BANQUET WEEKEND (SFWA Awards banquet and program) at Westin Crown Center, Kansas City MO. Info: URL—www.kcsciencefiction.org/2002nebs.htm

17–19 May 2002
LEPRECON 28 (Phoenix-area SF conference) at Embassy Suites Phoenix North, Phoenix AZ. Guest of Honor—Peter David; Artist Guest of Honor—Monte M. Moore; Music Guests—Jeff & Maya Kaatherine Bohnhoff. Registration—$35 to 5 May 2002, then $40. Info: LepreCon 28, Box 26665, Tempe AZ 85285; phone—1(480)945-6890; email—lep28@leprecon.org; URL—www.leprecon.org/lep28/index.html

17–19 May 2002
ROC*KON 2002 (Arkansas-area SF conference) at Holiday Inn Airport, Little Rock AR. Guest of Honor—Jennifer Roberson; Artist Guest—Jeff Dee; TM—David Lee Anderson. Special Guests—Michael & Carole Curtis. Info: URL—www.rockon.org

24–26 May 2002
CONQUEST 33 (Kansas City-area SF conference) at Airport Hilton, Kansas City, MO. Guest of Honor—Connie Willis; Fan Guest of Honor—Michael J. Walsh; TM—Patrick Nielsen Hayden; Artist Guests of Honor—Laura & Frank Kelly Freas; Special Guest—Frank M. Robinson. Registration—$30 until 30 April 2002, $40 thereafter. Info: ConQuesT 33, Box 36212, Kansas City MO 64171-6212; email—halliams@swbell.net; URL—www.kcsciencefiction.org/con33.htm

24–26 May 2002
OASIS 15 (Orlando-area SF conference) at Radisson Plaza Orlando, Orlando FL. Guest of Honor—Ben Bova; Artist Guest of Honor—Mike Conrad; Special Filk Guest—Michael Longcor; Special Guests—Jack Haldeman II, Barbara Delaplace. Registration—$24 until 30 April 2002, $28 thereafter. Info: OASFiS, Box 940992, Maitland FL 32794; phone—1(407)263-5822; URL—http://oasfis.org/oasis15.html

24–27 May 2002
BALTICON 36 (Baltimore-area SF conference) at Wyndham Baltimore Inner Harbor Hotel, Baltimore MD. Guests of Honor—Phil & Kaja Foglio, Mark E. Rogers; Filk Guest of Honor —The Boogie Knights; Fan Guest of Honor—Yoji Kondo; Costuming Guest of Honor—Carol Salemi; 2001 Compton Crook Winner—Syne Mitchell. Registration—$45 to 30 April 2002, $50 thereafter. Info: Balticon 36, Box 686, Baltimore MD 21203-0686; phone—1(410)JOE-BSFS; email—bsfs@balticon.org

Convention runners: If your convention has a telephone, FAX, email, or Web page URL, please let us know so that we can publish this information.

Convention attendees: When calling conventions for information, do not call collect and do not call too late in the evening. It is best to include a S.A.S.E. when requesting information; include an IRC if the convention is in a different country. ■

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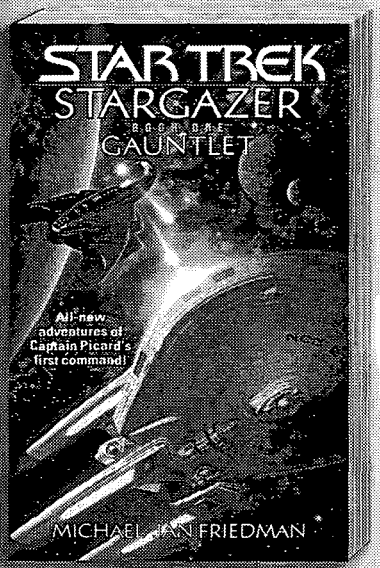

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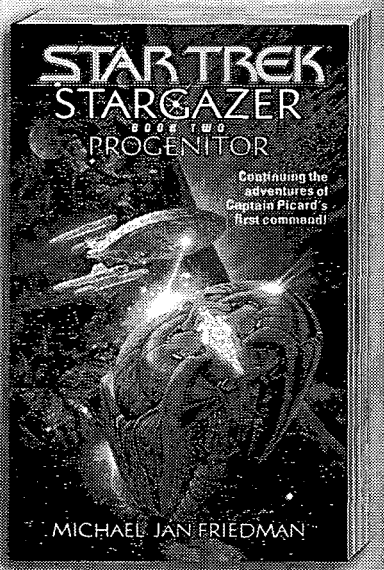

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